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THE RELATION BETWEEN THE ANXIETY NEUROSIS AND ANXIETY-HYSTERIA[1]

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AS is well known, the views of Freud and his school have in the past few years undergone a continuous development in regard to the problem of morbid anxiety, as well as to other problems. The object of this communication is to define, so far as a single member of the school may do so, the present attitude towards this subject and to attempt to render more precise the relations between the conceptions of anxiety neurosis and anxiety-hysteria.

The progress in our knowledge of anxiety states may be represented in three stages, which can briefly be described as follows: In 1895 Freud separated from neurasthenia a clinical group to which he gave the name "anxiety neurosis," and which comprises the characteristic symptoms, both physical and psychical, that are now well known. The causes of this syndrome he found to be not psychical, but physical factors, consisting of incomplete satisfaction of physico-sexual needs under circumstances when these are excited; typical causative situations are those such as repeated coitus interruptus and certain forms of sexual abstinence. It is thus a matter of a combination of undue physical excitation and insufficient efferent discharge.

[1]Read before the International Congress for Medical Psychology, September 9, 1912. Published, in translation, in the Internat. Zeitschr. f. aerztliche Psychoanalyse, January, 1913.

In 1908 Freud coined the term "anxiety-hysteria" to denote certain phobias the psychological structure of which resembled that of ordinary hysterical symptoms. The causes here are, as with hysteria in general, certain deviations in the development of the infantile psycho-sexual instincts, with the consequent accompaniment of repressed intra-psychical conflicts.

The third step, one made independently by Freud and most psycho-analysts, was the discovery that the same psychical factors that play the chief part in anxiety-hysteria are also to some extent operative in apparently pure cases of the anxiety neurosis.

The effect of this new knowledge was a double one: On the one hand it led to the necessity for revising various questions, such as the relation between the "actual neuroses" and the psychoneuroses, while on the other hand it made immediately intelligible a number of clinical problems that previously had been quite obscure. For instance, it explained some of the problems concerning the relation of the anxiety neurosis to hysteria, a matter to which Freud had already in his first communication (1895) devoted special attention, and it also explained the clinical finding that cases of hysterical phobia usually show as well symptoms of the anxiety neurosis. If we consider the essential elements of the infantile conflicts that lie behind such phobias we can understand how they often lead to another symptom, namely to an absolute or relative incapacity to obtain sexual gratification even when favorable conditions for this are freely present, in other words to an absolute or relative impotence. This incapacity can then bring about an anxiety neurosis, just as the absence of external opportunity for adequate gratification can, and this in spite of the fact that the psychoneurotic symptoms themselves render possible a sort of disguised gratification and a certain relief of tension.

As to the sexual origin of pathological anxiety there is, in my opinion, nothing more to be said. I have elsewhere[1] shown that, quite apart from actual experience, logical

[1] "The Pathology of Morbid Anxiety." Jour. of Abnormal Psychol., 1911. Reprinted as Ch. VIII of my "Papers on Psycho-Analysis," 1912.

reflection alone, if only this is carried through consistently and without prejudice, can lead to no other conclusion, and there is no other part of the whole Freudian theory that finds a more constant confirmation in daily practice. The main problem is to determine the relative importance that is to be ascribed in the causation of anxiety states to the psychical and to the physical lack of gratification respectively, especially in the pure anxiety neurosis. One could make the matter easy by saying that, from its very biological nature, the sexual instinct must have both a psychical and a physical side, — a statement which is of course obvious, —but the question is which of the two is the more important in the present connection, a question which evidently is of weighty significance in regard to therapeutics.

That the physical factors to which Freud called attention in his first communication are actually concerned is indicated by two considerations, first that the removal of them is followed by an improvement in the symptoms, and secondly that their presence in such cases is to be found with extraordinary frequency, if not constantly. Even such an opponent as Janet[1] could not overlook the latter fact; he writes, "Si on peut avoir des renseignements, des aveux dans la vie sexuelle des malades, on voit qu'elle est presque toujours troublée et qu'elle est bien troublée en effet dans le sens qu'indique Freud." Several authors have assumed, perhaps under the influence of the stress that Freud in the communication referred to laid on the bodily factors, that the problem is purely a physical one, and speak, as does for instance Loewenfeld, of a tension due to libidogenic substances. Although recent investigations on the interrelation of ductless glands, particularly Cushing's work on the hypophysis, make the existence of such chemical substances probable, it should not be forgotten that there is no absolute proof of this, so that it would seem wiser to avoid all dogmatizing in this direction so long as we have nothing on the subject beyond speculation. In any case it is certain that in connection with the physical factors in question there are two important psychical points of view that should not be overlooked:

[1] Janet. Les Obsessions et la Psychasthénie, 1903, t. I, p. 622.

1. Such factors hinder adequate satisfaction of various psychical tendencies of probably considerable importance, which can scarcely be satisfied in any other way. With many people, perhaps especially with men, there remains, after sublimation has accomplished all it can, a certain surplus of desire, an impulse towards psychical discharge, and a wish to assure oneself once again of that feeling of individual value and capacity that nothing can give to the same degree as satisfactory personal relations of an intimate kind. When the lack of such relations hinders the psychical discharge there results a damming-up of an essentially psychical order (quite apart from any accompanying bodily accumulation).

2. When the various physical factors are considered to which Freud called attention (sudden introduction of girls to gross sexual experiences, and so on), it is seen that they all concern situations in which there must of necessity arise an intra-psychical conflict; for instance, no human being leads an abstinent life purely of his own free will, but only because a certain part of his personality is victorious in the conflict with the other, instinctive part. The importance of such conflicts is not to be underestimated, for they act in the same way as the current conflicts in cases of anxiety-hysteria, *i.e.*, through the reinforcement of older ones originating in childhood. I am perhaps the more inclined to bring this factor of intra-psychical conflict into prominence because for biological reasons I derive morbid anxiety not directly from repressed sexuality (as is so often done), but from the inborn fear-instinct, which has been stimulated to exaggerated activity (as a defence mechanism) in response to the danger of the repressed sexual wishes. This conception can be related to Freud's view in which he traces the "anxiety transformation of sexual hunger" to the fact that the ego deals with an internal danger in the same way that it is accustomed to deal with external dangers; it fears them and defends itself against them. A parallel can thus be drawn, in my opinion, between pathological anxiety and the pathological love of the obsessional neurosis, which is an exaggerated response to repressed hate (Freud, *Jahrbuch*, Bd. I.).

In addition to these considerations the two following

have also to be thought of: There are cases of anxiety neurosis in which the removal of the physical factors (coitus interruptus, etc.,) leads to a partial improvement, but not to complete recovery, and then there are cases, exceptions it is true, in which such factors are altogether absent, *i.e.*, in which sexual intercourse is freely performed in the normal way. As is generally known, the analysis of such cases always reveals the presence of infantile psychical factors, similar to those characteristic of anxiety-hysteria. For all these reasons, therefore, psychical factors have to be credited with an essential significance in the causation of all anxiety states.

Can physical factors alone ever produce morbid anxiety? Probably not, for the following reasons: In cases where the psychical factors are less prominent, *i.e.*, where the psychosexual development approaches the normal, and where current conflicts are not very important, experience shows that such persons can tolerate a considerable amount of sexual tension without harm, far more than those with a more neurotic predisposition. Further, one sees that when sexual abstinence is forced on animals, *i.e.*, when the renouncement is due to purely external and not to internal causes (moral conflicts, etc.), the result in not an anxiety state but a condition of general irritability. The latter example is, it is true, only an analogy, and not an exact comparison. But the question cannot be tested with human beings, for, as was mentioned above, in most cases where physical factors are operative psychical ones are also; in cases where pressure is imposed from without, *e.g.*, in prisons and insane asylums, the persons can hardly be compared with the normal. The difficulty of isolating somatic factors in a pure form makes it necessary to remember that when we use the expression "physical factors" we refer to a given situation in which of necessity psychical factors also play an important part.

A few words may be said on the more general question of the relation of the "actual" to the psycho-neuroses. The distinctions between them drawn by Freud are mainly three: first, the individual symptoms of the former differ from those of the latter in the impossibility of reducing them further

through any form of psychological analysis; secondly, the causes of the former are physical, those of the latter psychical; and thirdly, the causes of the former are current, while those of the latter lie rather in the past (childhood). This scheme was correct at the time it was drawn up, and was an important advance on the previous confused neurological opinions; without it it would have been impossible to make any further progress. It retains its correctness also at the present day, but it is incomplete in the sense that it contains only a part of the truth and therefore needs revising and extending. The history of the past twenty years has shown that the most ruthless efforts in the direction of revision and extension of earlier incomplete views have been those made by Freud himself, and the present instance is no exception to the rule. In a recent illuminating communication[1], which might have been written in reference to the present subject, he says: "Psycho-analysis has induced us to give up the unfruitful contrast of external and internal factors of fate and constitution, and has taught us to find the causation of neurotic disease in *a definite psychical situation*,[2] which can be brought about in various ways." The difference between the anxiety neurosis and anxiety-hysteria cannot be described better than in terms of the various types of onset enumerated by Freud in this article. The former condition (anxiety neurosis) corresponds to the onset resulting from renouncement (Type A). The renouncement consists in the loss of psychical gratification, as a consequence of an unsatisfactory psychosexual life, and the accompanying conflicts lead, in the way mentioned by Freud, to an introversion of the sexual hunger (*Libido*) and a revival of older infantile conflicts. With hysterical phobias, on the other hand, where current conflicts and renouncement also play a considerable part, the most important factors are the demands of reality (*Realforderung*) or the inhibited development (Types B and C). But, as Freud insists, the distinction between the various types is to some extent artificial and schematic, inasmuch as in most cases the different factors

[1] "Ueber neurotische Erkrankungstypen." Zentralbl. f. Psa. Jahrg. II, S. 297.

[2] Not underlined in the original.

mentioned above are all concerned. The distinction is therefore entirely a quantitative and not a qualitative one, in some cases the one type or factor playing the most prominent part, in other cases the others. It is throughout comprehensible that with patients where the second and third factors are especially strongly developed it needs a lesser activity of the first one, or perhaps none at all, in order to evoke the illness. This consideration completely explains the variability of the different causative factors in anxiety states, the deeper and the more superficial, the older and the current ones. When the first are more prominent the patient may remain free from symptoms so long as there is no obstruction in the way of psychosexual gratification (current conflicts, etc.); but he can offer much less resistance than another person to the action of "physical" pathogenic factors, and will also, therefore, suffer sooner from an anxiety state.

The three distinctions given above between an actual and a psychoneurosis will now be considered a little more closely. The symptoms of anxiety-hysteria (phobias, etc.) are not only capable of a further psychological analysis, but cannot be conceived in any other way; they symbolize various wishes that have been subjected to repression. The symptoms of the anxiety neurosis seem to have a rather more complicated origin: on the one hand they represent the normal physiological accompaniments of fear, which has arisen through the psychical mechanism discussed above, *i.e.*, as a defense reaction to repressed sexual wishes, and which, just like the phobias, symbolizes both the wish and the censor opposed to it; on the other hand they may, and usually do, have an individual psychological mechanism of their own, quite similar to that of the phobias. An example: Breast dread shows both fear (free, floating pathological dread) and also certain definite apprehensions that are symbolized by the localization of the symptom; I have always found that this, especially when it is very pronounced — as with the anxiety equivalents — is overdetermined by psychical factors. The second distinction in question, the bodily in contrast to the mental, has been discussed above, and we saw that the latter factor plays an important part in

every case, whether of anxiety neurosis or anxiety-hysteria, while our knowledge of the former factor is as yet too indefinite to allow any precise statements to be made. In general it can be said that the "physical" factors (in the sense defined above) are as a rule much more pronounced with the anxiety neurosis than with the anxiety-hysteria, but even in this there is considerable variation. Similar remarks apply to the third distinction, the contrast between current and past factors, a subject that was clearly and exhaustively discussed by Freud in the communication mentioned above. We see, therefore, that there is no difference of principle between the conceptions of anxiety neurosis and anxiety-hysteria, since both conditions merely represent different types of the way in which the same final result, "a definite psychical situation," may be attained. The anxiety neurosis may thus be regarded as a single type or a syndrome of anxiety-hysteria; the latter is probably the wider conception.

Finally, some of the therapeutic applications of the preceding considerations may be emphasized, and this will be done in the form of a short statement, which needs no discussion in that it follows directly from what has been said. It concerns only the anxiety-neurosis. Psycho-analytic treatment of such cases should be undertaken under two circumstances: first, if the removal of the "physical" factors (*e.g.* coitus interruptus, etc.) does not lead to an adequate improvement in the symptoms, and secondly, if these factors are of such a kind that they cannot easily be removed (*e.g.* abstinence in widows over a certain age, in girls, etc.).

The conclusions that we have reached may be summarized as follows: The essential cause of all kinds of anxiety states consists in a lack of psychical gratification of the sexual hunger (*Libido*); the anxiety arises in the inborn fear-instinct, and the exaggeration of its manifestations represents a defensive response to repressed sexual wishes. In all cases the psychical factors play an important part, in many even the sole one. The physical factors are often contributory, but they alone are never sufficient to evoke an anxiety state; in addition these factors always have an important psychical side. The physical factors are much more prominent in the anxiety neurosis than in anxiety-hysteria

(phobias, etc.). The anxiety neurosis may be considered as a single symptom of anxiety-hysteria, the latter being the wider conception.

THE EFFECT OF PSYCHO-PHYSICAL ATTITUDES ON MEMORY

By William D. Tait

I. Introduction

THE investigation to be described was conducted in the Harvard Psychological Laboratory during a period of two years. Nine subjects took part in the experiments during the greater part of the first year and nine during the greater part of the second year. Five were common to both periods, and all were members of the laboratory.

This work is not quite the same as the orthodox memory experiment, but was suggested by the following facts well known to all psychologists. It is found that, due to some sudden shock, whether emotional or physical, one or both of the following may happen.

1. The most recent events just preceding the shock may be lost, *or*

2. Those events immediately *after* the shock may be lost.

Both of these may occur in any instance or only one. The latter is usually the more common and even where both occur this loss is more extensive.

Time was when psychologists considered the abnormal individual as something totally different from the normal type, but to-day matters have changed, and there is a growing belief and conviction that there are no strong demarcation lines, and that, in general, the abnormal case only shows very exaggerated conditions of what is found in the normal individual. On account of the absence or comparative absence of this exaggeration we say that the normal person is better balanced. Sanity and insanity are then relative terms. The whole question is one of proportion, which is decided by fitness to meet environment.

More particularly, then, an attempt will here be made to see how far the memory of the normal individual is influenced by shocks; to determine the influence of pleasant

and unpleasant feelings on memory; to see how different kinds of ideas crowd one another out; to find out some of the factors which have an influence on memory after impressions have been received, and to discover if possible the significance of this after period. Further, if it be found that to all appearances some impressions are forgotten on account of some particular filling of the after-period, can some or all of them be recovered?

This outlines the general field. Needless to remark, no complete answer is given, but it may open up new ground in a somewhat neglected field.

Some years ago the aim of the experimental psychologist was to find out general laws, and little stress was given to individual differences, but now there is a growing tendency to see in these seemingly small differences powerful factors in deciding the make-up of the individual. In what follows there are some things which are common to all, and some strictly individual, and of these individual differences some are and some are not explained.

II. Method and Material

For the most part words were the material used. They were arranged in lists of twenty. In some cases the words forming a list were associated with one another and in other cases they were detached or isolated. Some lists were made up of pleasant or unpleasant words respectively, and in some experiments colors were used. The method consisted of a combination of reproduction and recognition, except in the case of colors, where recognition alone was employed.

These lists of twenty words were read to the subject in an even tone and with great regularity. (Timed to the tick of a stop-watch.) This required practice and hence for a considerable period, at first, no results were counted. The subject was instructed to reproduce the words remembered at a given signal, and the time was taken with a stop-watch from the giving of the signal until the subject uttered the first word. As mentioned above, the filling of this period after the reading of the words and the giving of the signal

was varied as will be described under the head of each experiment. The receptive attitude of the subject was also varied in the different experiments — sometimes it was passive, and at other times he was told to remember in an active way. The conditions of the experiment also varied the receptive attitude in an objective way.

III. Experimental

The first study to be taken up is the influence of the feelings of pleasantness and unpleasantness on memory. This is not altogether new, but it has an important bearing on other experiments, and the subject was approached in a somewhat different way, not altogether agreeing with the work of some other experimenters. This problem was investigated in three different ways.

1. Lists of words used to test memory were either pleasant or unpleasant.

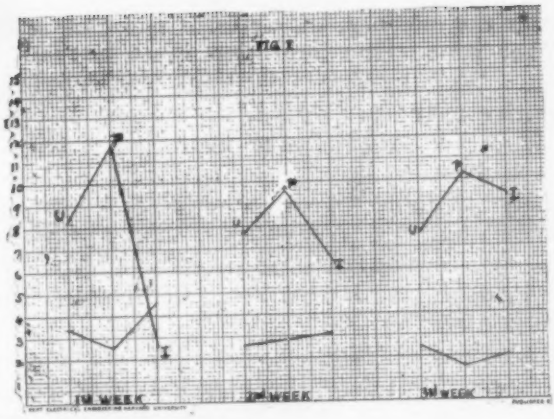
2. Neutral lists with the after-period filled in by something pleasant or unpleasant.

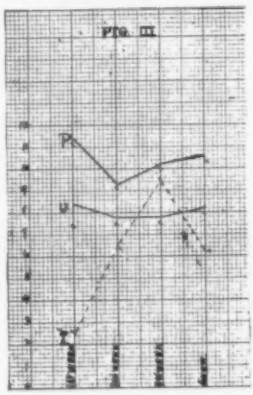
3. Recognition of colors.

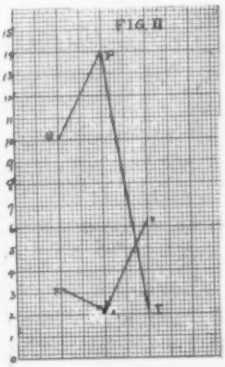
(1) Lists of twenty words each were read to the subjects, and three kinds or classes of lists were used. In one, the words composing the list were pleasant, optimistic, cheerful; in a second, unpleasant, pessimistic, cruel; while in the third the words were as devoid of feeling tone as possible. In none of the lists were the words purposely associated. The experiment in this connection covered a period of three weeks, and eleven subjects took part; they were instructed not to use any artificial means of remembering the words or to form any associations, but simply to take the words as they came, let them drop in and see how many remained.

Fig. I shows the results in graphic form. The ordinate shows the number of words remembered out of twenty. U=unpleasant list, P=pleasant list, I=indifferent list.

The lower lines represent the time from the giving of the signal until the subject uttered the first word. Each point—U, P, I—represents the average number of words remembered by eleven subjects. Curves for each of the three weeks are given. Fig. II is an individual record







chosen more or less at random. Fig. III gives the average results grouped.

The obvious conclusion is that the pleasant words are remembered better than the unpleasant or indifferent. The last week is an apparent exception because the supposed indifferent list was not indifferent for over half the subjects. It is also worthy of note that the unpleasant words are remembered better than the indifferent. It will also be seen that the time is shorter in cases where there are more words remembered, that is, the time is shortest in the case of the pleasant words and longest in the case of the indifferent. This is in agreement with the results of Bigham, *viz.*, that

the quicker the memory, the better it is, or the better it is, the quicker it is. One limitation must be made to that statement. We must always distinguish between immediate and retentive memory. Immediate memory is better, the quicker it is, but this is by no means necessarily true of retentive memory.

In only one subject were the unpleasant words remembered better than the pleasant ones, and as this is not regarded as an exception it will be discussed later.

The introspection is in substantial agreement with the objective results.

Introspection on pleasant lists. "Words isolated and disconnected and yet they were easy to remember."

"List seemed on the bright side of life and easy to remember."

"List seemed optimistic and easy to remember."

"Considerable emotion was an aid in the case of four or five words. No negative influence of emotion. Words did not inhibit one another as in the case of the unpleasant list."

"Words had an emotional tinge and easy to remember."

"No emotion."

"Some emotion connected with this list, especially the word 'hero,' which hauled other words along with it. Easier to remember than the last list (unpleasant)."

"More emotion connected with this list than with the other, and remembered more easily."

"Ill-defined feeling of satisfaction. This was a decided aid."

Introspection on unpleasant lists. "The words which are remembered stand out prominently and inhibit others."

"Decided enotional coloring."

"Vivid emotion, words seemed to crowd one another out."

"Not conscious of any emotion."

"No emotion. Words remembered stood out in relief and inhibited others. This was very noticeable."

"No emotion. Words remembered stood out clearer than the other words, so clear that they seemed to inhibit other words."

"Some emotion."

"Words remembered stood out plainly and seemed to inhibit others. The word poverty is an example."

It will be noted that many of the subjects, and those the most observant, speak of the inhibitory effect of the unpleasant words. There may be three reasons for this. First, it may be due to a strife between the expressions aroused by the unpleasant words and a more or less pleasurable attitude in the subjects themselves previous to hearing the list. Secondly, it may be due to a strife between the expressions aroused by the words individually. Expressions of unpleasantness are not so well unified as pleasant ones; the emotions connected with them and the accompanying expressions or instincts are more diverse than in the case of pleasant emotions. The latter is the more likely. Thirdly, unconscious suppression of the unpleasant.

(2) In the experiment described the lists were intrinsically pleasant, unpleasant or indifferent. In the following, the lists are all as indifferent as possible, and the words forming such lists were not associated in any obvious way. The receiving mood of the subjects was as far as possible the same. The influence of pleasantness or unpleasantness was introduced after the lists were read to the subjects. After one list something pleasant, optimistic and cheerful was read to the subject; after another something unpleasant and depressing was read.

The results here are not so evident, due to the fact that the reading itself was a distraction and that the associations thus involuntarily introduced would be as various as the different subjects. The work on this aspect of the question covered a period of three weeks with eleven subjects. The results may be summed up as follows:

	AVERAGE % OF WORDS REMEMBERED
When list was followed by pleasant ideas	21
When list was followed by unpleasant ideas	15

There is a difference of six per cent in favor of the pleasant words, which is in accordance with the results of the preceding experiment.

An individual example of how one unpleasant idea may

inhibit others and yet remain itself is well evidenced in the case of one subject specially well trained and very acute in the way of introspection. A list which was apparently neutral for all the other subjects contained the word "fagot." This immediately brought up vivid recollections of tortures contained in Lecky's *History of European Rationalism.* In this instance every word with the exception of "fagot" was obliterated. Evidently, the feeling and emotional tone connected with the word in question was very strong, and possessing a strong attitude, inhibited all others with different expressions or attitudes. Put in another way it would be that the complex — for no idea is alone — to which "fagot" belonged was stronger than the other complexes, strength being defined in terms of emotion and feeling, which accompany certain motor expressions. However, this is anticipating.

Introspection. "Had list excellently in mind before hearing about the torture. Its influence is destructive."

"Tortures seemed to scare one from the words."

"Reading about tortures is far more destructive than other reading."

"Felt that words remained better by the pleasant reading."

"Mind an absolute blank after the unpleasant reading, and many words never came back."

"Mind a blank after reading the unpleasant story."

The evidence so far seems to show that unpleasant ideas have a tendency to be suppressed and have a suppressing influence on other ideas with which they are connected intimately or even more remotely.

(3) The third method was the recognition of colors. Here a series of fifteen colors was shown to the subject on a uniform gray background, and he was asked to pass judgment according to the following scale:

1. Very pleasant.
2. Moderately pleasant.
3. Just pleasant.
4. Indifferent.
5. Just unpleasant.

6. Moderately unpleasant.
7. Very unpleasant.

After the judgment of the series was completed, two or three alterations were made in it by changing as many of the colors. The series thus changed was again shown to the subject in a different order and judgments again asked for. The subject was also asked after the exposure of each color if that color was in the preceding series.

In all, two hundred and forty-two tests were made, and the results can be summed up as follows:

Averaged number of pleasant colors remembered	63.4%
Average number of unpleasant colors remembered	47.2%
Average number of indifferent colors remembered	27.3%

The results would be much more marked but for the fact that one subject had the heartiest detestation for the whole work with colors, and reported every color unpleasant with but few exceptions. To some extent the same holds true in the case of two other subjects who came in the afternoon and were very often fatigued by their work of the morning. These exceptions could be explained on the theory that the tone of the existing complex is stronger than that of the incoming impressions and the same mantle is thrown over them.

It may seem strange that the unpleasant impressions are remembered better than the indifferent. A reason might be given that both the pleasant and unpleasant impressions arouse a definite attitude on the part of the organism, and are biologically important, whereas the indifferent impressions can be ignored. There are two sides to this attitude, so that it can be called a psychophysical attitude. On the physical side there is the arousal of certain instincts or impulses, or the combinations of these instincts or impulses into complexes. On the psychical side there are the emotions and complexes of emotions corresponding to the instincts and impulses. Added to this again are the feelings of pleasantness or unpleasantness. It must not be understood that the instinct and emotion are different or even running parallel, but they are one and the same fact looked at from a different point of view. It may also be said that

if any instinct is stopped or arrested in its expression the feeling of unpleasantness is apt to be aroused. Motor activity is curtailed. This may come about by the conflict of different instincts. Physiologically the matter can be resolved into the compounding of reflexes.

It might be well to say what is meant by attitude. As used here it means instinctive actions or impulses or the combination of such with their accompanying emotions. To all this is added feeling tone of pleasantness or unpleasantness in various degrees, and also the whole list of the so-called organic attitudes, which by their varied combination form a background and coloring for the whole mental life. To cover all this the term "psycho-physical attitude" is used.

The pleasant impressions are remembered better because the reactions which they arouse are in harmony with the welfare of the organism; that is, the attitude which is aroused has a tendency to be continued, and in many cases this may be only an incipient response. Unpleasant impressions are rejected for the opposite reason; that is, they arouse attitudes which do not have a tendency to be continued, except in abnormal cases. Looked at from the point of instinct, one can say that instincts which have a pleasant feeling tone have a tendency to propagate themselves, and the opposite is true of instincts which are accompanied by unpleasant feelings. Indifferent impressions are not remembered well because there is practically no attitude aroused either towards or away from.

However, there is another side to all this. In some cases unpleasant impressions may be remembered better. This may be due to the fact that the existing complex has an unpleasant feeling tone which is so strong that it decides which impressions shall be selected from those incoming. This is what happens in abnormal cases, and one can conceive that there is a pleasure in so doing. In short, the tone of the existing attitude or complex (for those who like that word better) is a deciding factor in what shall be remembered. Now this tone is to a large extent influenced by the various compounds of instincts which are aroused, that is, by compounds of reflexes, so that in the final analysis it is a matter of reaction whether we speak of attitude or instinct or complexes, or of emotions or of reflexes.

IV

As already stated, the period after the impressions are made is an important one. Some of the experiments to follow were performed with reference to this problem. Words were used as material and read to the subject as in the preceding experiments. After the list was read to the subject, one of several distractions was introduced before the signal was given for the reproduction of the words remembered.

The following table is submitted:

TABLE A

	a	b	c	d	e	f	g	h	i	j	MEAN	M. V.
8.	20	25	20	35	25	35	25	30	45	35	29.5	6.5
9.	20	25	15	20	15	30	10	35	60	30	26.0	9.8
10.	15	10	..	0	25	25	15	20	25	35	18.8	7.9
11.	20	15	..	20	30	25	25	..	15	40	23.7	5.7
12.	15	20	26	15	25	25	10	0	..	..	17.0	4.3
13.	0	..	..	..	15	30	15	25	..	30	19.1	5.1

A word of explanation concerning the table. The letters at the head represent the different subjects, and the numbers under each, the percentage of words remembered out of a list of twenty. The numerals to the extreme left refer to the various tests in order to be able to identify them throughout the investigation. The mean and the M. V. are self-explanatory. Except in the case of the shot, the interval after each list was one minute, filled as follows:

8. Passivity.
9. Attention directed towards recalling the words.
10. Disagreeable odor.
11. Sudden ringing of hidden bell.
12. Pistol shot.
13. Dizziness.

Ten subjects took part in this test. During the reading of the lists they were instructed to be passive and just sufficiently awake to take each individual word. Words making up the lists were not associated with one another.

It is at first noticeable that the ordinary sense stimuli have little effect, due to the fact that they do not arouse any strong attitude. The factor which seems to have played

the greatest part in this subsequent interval was some kind of concentrated mental activity, such as arithmetical calculation, etc. In nearly every case, the list of words was entirely forgotten. *That they disappear for good is another question to be considered later.* In many cases the pistol shot had an almost equal effect with the mental work, and for the same reason. It required an adjustment out of the ordinary, and hence the attitude was strong at first. Associations, etc., also play an important part in the feeling tone. However, it is not so uniform in its effects, and in many cases the effect grew less and less. Odors seemed to have little influence on most subjects, and those who were affected attributed it to some association or more commonly to the fact that there was something held near the face. Without this remark some of the numbers in the table would be misleading.

The most favorable condition seems to have been passivity, where the subject was instructed to be passive and let himself drift along. In plain figures attention does not seem to have been so good as passivity, but the difference is too small to be of great importance. It may be that the very fact of trying to recall the list during the one minute has something of the same effect as other mental work, and thus a new psycho-physical attitude is introduced. The fact that the passive state is a little better than attention seems to lend color to the view of some that a certain period after impressions are received is necessary for organization and assimilation. It may be that memory is better in one case than another because there are no conflicting attitudes. The longer the attitude aroused by the impression continues, the better the chance of memory for that impression, and of course the opposite holds true. If the attitude aroused at first is curtailed by the intervention of another or of others, then the first impression loses its hold, so to speak. This may also apply to abnormal cases.

The introspection is as follows:

"Effort of attention did not seem much of an aid."
"Odor seemed to interfere."
"Bell did not interfere."

"Not much effect from pistol shot."

"Dizziness seemed to drive some words away."

"Shot erased some words, nervous tonus over the whole body."

"Effort of attention seemed to retard memory."

"Bell did not bother much."

"Bell a little startling at first but soon lost its effect."

"Do not feel that attention is any aid."

"Odor attracted attention."

"Odor interfered with memory."

"I cannot see that attention was successful."

"Shot was complete interruption — felt as if my mental powers were out of commission."

"Bell was not much of a disturbance."

"Effect of attention was beneficial."

"Do not think that attention was beneficial."

In the experiment tabulated in Table A the distraction or shock was applied after the list was read, but in the following it was given about the middle of the list.

TABLE B

	a	b	c	d	e	f	g	h	MEAN	M. V.
15.	20	25	20	30	30	20	25	35	25.6	4.5
16.	10	20	10	25	40	20	25	10	20.0	7.5
17.	5	5	0	20	15	5	15	5	8.7	5.9
18.	5	20	10	..	20	..	5	..	12.0	6.4
19.	15	25	25	..	..	25	25	25	23.3	2.8
20.	15	..	..	20	20	25	15	25	20.0	3.3

This table is arranged on the same principle as Table A, so no further explanations are necessary. The conditions in each case were as follows:

List 15, Hidden bell rung in the middle of the list.
List 16, Shot in the middle of the list.
List 17, Puzzle *after* the list.
List 18, Exercise after the list.
List 19, Odor in the middle of the list.
List 20, Rotation during reading of the list.

In this test as in the preceding one the subjects were

passive. A few facts in connection with the above table and Table A are to be noted.

1. The shot, although not so destructive coming in the middle of the list as when coming after it, has more effect than the other distraction. Objectively from the table it is on a par with rotation, but in this latter instance there was in some cases a difficulty in hearing the words.

Coming in the middle of impressions the shot seemed to have different effects on different individuals, which are not shown in tables. With some, the words after the shot are lost, that is, in the latter part of the list, while with others it is the words in the earlier part of the list, or before the shot, that disappear. On the whole, however, it seems that not so many are lost as when the shot comes at the end; that is, it has a retrograde effect. This can be seen by comparing Table A with Table B. To some extent, it is true, in cases where the words after the shot have disappeared, that those before it are all the more firmly fixed, or, as one subject put it, they are "frozen stiff." In other instances, when the words before the shot were lost those coming after it were reinforced.

2. It will also be noticed that the solving of a puzzle at the end of a list is more destructive in its effects than the shot was in Table A. An average of 10 words was remembered after the puzzle and 16.6 after the shot.

3. It may be added that the sudden disturbances seem in many cases to drive the subject to the list, and in the majority the words which are retained are those which come after the distraction. On the whole it seems pretty evident that distractions coming in the middle of a list are not so destructive as if coming at the end. The greatest effect, then, is retroactive.

The introspection is as follows:

"Lost the words before the bell."

"Shot brings me back to the words."

"Bell disturbed what came later."

"Shot brought me back to the list."

"Shot was a great disturbance. Seemed to be an exhilaration."

"Bell disturbed what came after it."

"Lost some words immediately after the bell. Felt as if I came back to the list with a feeling that I had been away from it."

"Bell cut away the first part of the list."

"Effect seems to be on words preceding the shot."

"Bell broke up the first few words."

"No words remembered after the pistol shot."

V

So far the lists used were made up of detached or isolated words, that is, they were not associated with one another in any evident way. In the following experiment the list in each instance was made up of associated words, in some cases concrete, and in some cases abstract. The following is the table of results:

TABLE C

	a	b	c	f	h	i	MEAN	M. V.
21.	30	25	25	45	15	55	32.5	11.6
22.	35	25	35	30	25	55	34.1	7.5
23.	30	35	30	30	30	25	30.0	1.6
24.	20	20	25	30	25	30	25.0	3.3
25.	20	15	35	35	5	50	26.6	11.6
26.	10	20	15	30	0	15	18.0	7.6

The table below will show how the interval after the list was filled in each case, and also the character of the list.

21. Concrete associated list followed by one minute passivity.

22. Abstract associated list followed by one minute passivity.

23. Concrete associated list followed by one minute attention directed to recalling the words and holding them till the signal was given.

24. Abstract associated list with the same conditions as 23.

25. Concrete associated list followed by pistol shot.

26. Abstract associated list followed by pistol shot.

The most noticeable thing here is the effect of the shot on the concrete and abstract lists. Only in the case of one

subject are more abstract words remembered after the shot, and the subject was an inveterate Hegelian. In the instances of lists 25 and 26, where the list was followed by the pistol shot, an attempt was made to see if any words which had been lost by the effect of the shot could be recovered. This was successful on four subjects and the means employed as follows:

A metronome was set going, and the subject was instructed to give a word for each beat of the metronome and not to choose words, but give any that came up irrespective of whether they belonged to the list or not. This process was successful in the case of concrete words, and only very partially successful in the case of abstract words; in fact, no success at all. The facts may be tabulated as below. The numbers represent the per cent of the lost words which were recovered.

SUBJECT	ASSOCIATED CONCRETE	ASSOCIATED ABSTRACT
a	18.7	16.6
b	17.6	0.0
c	15.3	0.0
f	23.0	0.0
Mean	14.9	3.3

This experiment of trying to recover lost words was tried on five subjects only, and the average computed on that basis. It is readily seen that the concrete associated words have the advantage, not only in ease of recovery, but also the fact that the shot was not so destructive on them in the first instance. A tentative explanation in keeping with the rest of the experiment might be, that the concrete words have more marked attitudes, that more instinctive and impulsive reactions are connected with them, and more feeling tone. This also agrees with Ribot's Law of Regression.

In Table A we saw the result of distractions coming after lists of words made up of detached words. In the experiment now to be described the effect of those distractions will be studied when coming *after* lists of associated words.

TABLE D

	a	b	c	d	f	g	h	i	MEAN	M.V.
27.	50	15	25	35	45	35	20	30	31.8	9.2
28.	25	30	30	45	45	30	35	35	34.3	5.6
29.	60	30	45	40	50	50	..	40	45.0	7.1
30.	20	10	..	15	50	20	5	30	21.4	10.4
31.	15	35	45	45	40	30	25	55	36.2	10.0
32.	..	40	20	..	45	40	..	25	34.0	9.2
33.	0	25	25	25	20	0	10	45	18.7	11.5
34.	0	5	0	5	10	0	0	10	3.7	3.7

The following schedule will show how the periods after the various lists were filled.

List. Filling of after period.

27. Immediate reproduction. No after period.
28. Passivity for one minute.
29. Attention for one minute.
30. Shot.
31. Bell.
32. Odor.
33. Followed by one minute arithmetical work.
34. Followed by one minute arithmetical work.

This series was made up of eight lists, the first seven of which were composed of associated words, and the last one of detached words. The same conditions, as to subject and experimenter, hold as in the previous experiments. The purpose of the first six lists was to test the influence of distractions on associated material, and in the case of the last two to see if the words which were lost could be recovered, and to ascertain the difference in this respect between associated and detached words. Eight subjects took part in the experiment. The following results may be noted.

(1) Of the sensory disturbances the shot is as before the greatest, but not so great as the mental work represented by the arithmetical calculation, as is shown by comparing list 33 with list 30.

(2) Spending the minute after the list in giving some attention towards getting back as many words as possible is more beneficial than passivity. This is directly opposed

to the results in the case of detached words as recorded in Table B. Reproduction of associated words is benefited by the direction of attention on their recall.

(3) The bell and the odor made very little difference, being practically on a par with the passive period.

(4) One of the most important things is the number of words recovered in lists 33 and 34. The former was made up of associated words, and the latter of detached words. These results can be tabulated as below.

	Per Cent Of Words Recovered	
SUBJECT	ASSOC. LIST	DETACHED LIST
a	35	0
b	6.6	0
d	13.3	0
f	12.3	0
g	35.0	0
h	5.5	0
i	9.0	0
Mean	15.2	0

This was tried on seven subjects, and a metronome was used as before, but the detail of the method was somewhat different. In the former experiment a stenographer took down the words as spoken by the subject in rhythm to the metronome, but in order to do this the metronome had to run at a comparatively slow speed, and it was found by trial that a slow speed was not so effective in bringing back lost words. Then, too, the articulation of the subjects speaking rapidly made it hard for any one to get all the words, and hence many were inevitably lost. In place of this the subject was instructed to write down words to the beat of the metronome, and not to make any selection in so doing. This was found to be a better method than that of selection. In all cases the subject first gave all the words remembered, before beginning the metronome test.

The fact that no words were recovered from the detached list is quite conclusive as the figures 15.2 to 0 show. Not even a chance word was recovered, neither in this experiment nor in the ones to follow, so that the recall of the associated words cannot be attributed to mere chance, and, in any case, the word "chance" should not be in the psychologist's

vocabulary any more than in the physicist's. One might explain it on the grounds that the associated material is grouped around one central attitude, or to look at it from another point of view it forms part of one complex so that when some members of the complex come up there is a tendency for the others to do likewise. They are already part of the mental equipment while the detached material is not, in fact organization might be defined as the grouping of material into complexes or becoming attached to some common or predominate attitude. The detached words are not remembered so well, not because they do not arouse attitudes, but because the attitudes which they do arouse are in many cases opposed, so that there is sort of a mutual inhibition. In a word, the associated material forms a complex bound together by a psychophysical attitude. This same principle applies to the question of pleasantness and unpleasantness.

The experiment next to be considered follows naturally from the preceding ones. In Table E (1) will be given the percentage of words reproduced immediately after the distraction and in Table E (2) the number of words recovered by the metronome method.

TABLE E (1)

	a	b	c	d	e	f	g	h	i	MEAN	M. V.
39.	15	25	20	10	15	25	5	0	50	18.3	10.3
40.	30	25	25	35	60	50	20	60	85	43.3	18.1
41.	0	5	15	15	0	5	15	0	15	7.7	6.4
42.	30	15	55	30	50	60	35	35	30	37.7	11.4

TABLE E (2)

	a	b	c	d	e	f	g	h	i	MEAN	M. V.
39.	0	0	0	0	0	6.6	0	0	0	0.73	1.3
40.	14.2	13.3	0	7.4	0	0	6.2	0	0	4.6	5.0
41.	0	0	0	0	0	0		0	0	0.0	0.0
42.	28.5	35.2	9.9	..	0	62.5	61.5	15.3	7.1	27.5	17.2

It will be seen from the tables that four lists were read. The first three of these were made up of detached words, and the last one of associated words. In all cases the attitude of the subjects was the same as in the former experiments, and the tables are on the same plan.

After list 39 the subject was told to remain passive for two minutes and then asked to translate some German. This lasted for one minute, and then the subject was asked for as many words as were remembered. The next thing was the metronome test, which gave a result of .73 or practically nil.

In list 40 the subject was told to remember the words, and the list was read four times. Then followed the German translating, and next the reproduction of words remembered, and finally the metronome test. Only a comparatively few words were recovered by the metronome method.

In list 41 there was no passive period, and the subject was given the German to translate as soon as the list was read. Here fewer words were remembered, and none were recovered by the metronome. It is interesting to compare this list with list 39, where there was a passive period after the reading of the list. In the former cases more words were remembered, that is, the distraction had less effect. It may be explained on the theory that the passive period after the list allows time for the arousal of certain attitudes, and thus helps to fix the words. The case of the learned list and the associated one can be explained on the same basis.

The last list in this series was made up of associated words, and was immediately followed by German translation, then the subject was asked for words remembered, and then the metronome test, which was quite successful, as in previous cases.

In addition to the above observation a few more general facts may be mentioned.

(1) In the case of detached impressions memory is better when there is a passive period after the reception of the impressions. This is in agreement with the previous experiments.

(2) In the case of the learned list more words are immediately remembered, but fewer are recovered.

(3) The number of words recovered by the metronome test is considerable, and bears out previous results in connection with associated material.

The influence of the passive period after impressions

was to some extent noticed in the last experiment and in some preceding. In the following test it is the aim to find out the influence of such a period on both detached and associated material so that they can be more exactly compared in that respect. In addition, the filling of the period after the reading of the list will be looked at from the point of view of attention. To do this the subject was to spend one minute trying to recall as many words as possible and to hold those already in mind.

The following is the table.

TABLE F

	a	b	c	d	e	f	g	h	j	k	MEAN	M. V.
47.	17.5	25	42.5	25	27.5	30	35	25	25	27.5	.....28.0	4.7
48.	20	7.5	32.5	22.5	25	30	25	30	22.5	37.5	.....25.2	5.7
49.	37.5	40.0	35	40	35	45	37.5	30	27.5	42.5	.....37.0	4.1
50.	47.5	40	32.5	45	57.5	55	47.5	32.5	32.5	50	.....44.0	7.7

The percentage of words credited to each subject is the average of two lists under each condition. The following facts may be noted.

(1) That in agreement with preceding work a passive period after detached impressions is superior to one of effort in trying to recall those impressions.

(2) That the opposite is true in the case of associated material.

(3) That the two foregoing facts are significant in relation to the recovery of words with the metronome, namely, that no words (one solitary instance excepted) were recovered in the detached lists, but only from lists which were made up of associated material.

In view of this, it may be said that a certain period is necessary following a series of impressions in order that they be the better fixed. This period gives time for initial attitudes to take place, and thus group the impressions into a complex. In the cases of the associated material this is unnecessary, for they are already grouped, and for this same reason less affected by distractions. We know also from pathological cases that the material last acquired is the first to be affected by disease, etc.

The experiment next to be considered has to do with the

effect of motor accompaniments as one of the conditions of memory. The method of procedure was as follows: The list of twenty words was read to the subject, who was instructed to be passive, and then as he recalled the words to make some movement for each word thought of. Sometimes it would be the lip and tongue movement or some movement of the arm for each word. After that the subject was given some mental arithmetic for the period of one minute. In this way, it was thought to find out the different fixating power of the various movements. The work was carried on for a period of two weeks, and the percentages for each week represent the mean of two lists under each condition, making four for two weeks under each condition. Further, during the second week the various conditions were placed in different positions in the series from what they were the first week. For example, during the first week the writing of words in the air came first in order of trial, but in the second week it came last. Ten subjects took part for the first week and eight the second.

TABLE G (1). FIRST WEEK

LIST	CONDITION	MEAN	M. V.
77.	Writing words in the air	20.7	5.1
80.	Passive after reading of list	13.4	5.3
82.	Movements of lips and tongue	12.7	4.7
84.	Arm movements for each word	14.0	6.2

TABLE G (2). SECOND WEEK

LIST	CONDITION	MEAN	M. V.
86.	Arm movements	19.0	5.0
88.	Movements of lips and tongue	16.5	8.5
90.	Passivity	14.5	7.8
92.	Writing words in the air	21.2	0.0

Combined results for the two weeks are as follows:

CONDITION	MEAN
Passivity after list, then arithmetic	13.9
Movements of lips and tongue, then arithmetic	14.6
Arm movements, then arithmetic	16.5
Writing words in air, then arithmetic	20.9

It will be seen that the condition conducive to the best fixation is that of writing in the air, second best is

arm movements, then articulatory movements and passivity, in descending order. There are some individual differences which are due to some unavoidable associations by one or two subjects. As throwing some more light on the results, the introspective judgments of the subjects as to the best method are interesting. These are tabulated as follows:

CONDITION	JUDGMENTS IN FAVOR OF
Writing in the air	10
Articulation	4
Arm movements	2
Passivity	2

Practically this bears out the objective results.

In general the results of this experiment are as follows: The writing of the words in the air is better because such is an organized attitude while the others are not so customary, and hence detrimental to some extent. Articulation was too marked, that is, more expressive than is usual, hence attracted attention to the movement itself. In addition to this the incipient articulatory movements are combined with writing in the air, so that has a double advantage.

Summary of Experimental Conclusions

I. Pleasant impressions are remembered better than unpleasant, and both are remembered better than indifferent ones.

II. Not only are such impressions themselves remembered better, but they seem to exert the same influence on other material. Unpleasant impressions have the opposite effect, that is, they exert a repressing influence on other impressions.

III. Ideas are more affected by other similar mental material than by sensory disturbances, unless these latter arouse strong psycho-physical attitudes, e.g., the pistol shot.

IV. That such distractions, whether sensory or otherwise, have less effect on associated material than on detached. This is proved not only by the fact that more words

are remembered from an associated list after a distraction, but also by the important fact that practically no words are recovered from those lost in the case of associated material, whereas many of those lost from an associated list are recovered, seeming to show that the associated material is better organized. By this is meant the grouping of impressions around attitude.

V. This is further proved by the fact that if there is a passive period after a detached list before a distraction intervenes, the effect of the distraction is lessened.

VI. Even where there is an apparently complete loss of associated words they can be recovered to a great extent by the metronome method already described.

VII. This recovery method failed in the case of abstract associated words which are in this respect on a par with the concrete detached words.

VIII. The effect of attention in the case of associated material was an aid, but not so in the case of detached words.

IX. That motor accompaniments are an aid, provided they are not new or unusual, as then they act the same as another attitude intervening. If the words are grouped around some existing set of attitudes, better still if several motor activities are combined, as in the case of writing in the air, they are remembered better. This combination of motor activities is really a motor definition of attitudes which in turn is a compounding of reflexes.

X. Disturbances coming in the middle of the list are not so effective on memory as when coming at the end. In some individuals a distraction may even reinforce what went before, but in the majority of cases it effaced what went before and reinforced what came afterwards. The greatest effect of shocks on memory is retroactive.

Remarks

It is not our purpose to go into the physiology of the brain processes which are at the basis of memory. That has been done elsewhere as well as the knowledge of such will allow. Leaving that aside, a few stray notes on some points may not be out of place.

From the experiments as they stand it would seem to be an evident conclusion that pleasant impressions are remembered better than unpleasant. Such a conclusion is to be taken with care. It may be that the unpleasant things are remembered, potentially just as well the pleasant, but their expression in the normal individual may be suppressed. They arouse attitudes or reactions which are just as intense as the pleasant and that is the reason why both classes are remembered better than the indifferent, which in all probability are completely dropped. The unpleasant impressions may have made connections with old attitudes, old states of consciousness in the larger sense. These old ones may be completely suppressed, and the new ones share the same fate. Abnormal cases show us that these old experiences, possibly long since absent from self-consciousness still play a part on incoming impressions. They still play it as psychophysical attitudes. This then is in all likelihood the explanation of the experiments dealing with pleasantness and unpleasantness. One subject who always made a good record with unpleasant words took this means, without knowing it, of course, of expressing in a dislocated way some of his personal feelings, which were usually well masked. Another subject always remembered unpleasant colors for the reason that some brown colors aroused an intense antipathy to the whole experiment, notwithstanding the fact that he was something of an artist. The reason has lately been found, by experimental methods as a continuance of this investigation, to have been a long forgotten experience of childhood[1]— one that was vividly emotional. In a general way this holds true of the whole investigation.

It may be worth while to make a note in regard to the memory of concrete and abstract words, and the effect of distractions on them. Impressions which take a large part in the actual contact of the organism with its environment will arouse more attitudes, and they will be more habitual and ingrained than those impressions which do not perform such a function. They will have greater emotional value, greater feeling value, and will represent a greater number of instinctive or reflex reactions in one direction. Such are

[1]Cf. Journal of Abnormal Psychology, April-May, 1912.

concrete words, hence they are better remembered, less disturbed by distractions, and even when apparently banished by some cause they are less liable to complete loss. To a large extent the opposite is true of abstract words. They serve the purpose of adjustment to environment, but more remotely.

It may also be stated that if a subject is in an unpleasant "frame of mind," as we say, that is, if the subjective psychophysical attitudes are of a certain kind, and if a certain incoming impression does not arouse a very strong attitude of its own, then it will take on the tone of the complex existing at that time. The converse is true of pleasant complexes. Impressions which harmonize with the existing attitude stand a good chance of being well remembered. Psychophysical attitudes then select from impressions those that are remembered by way of conscious reproduction. Inhibition or suppression, of course, may take place as already explained. The cause of any existing attitude may be said to lie in the response to some previous impression or impressions with a high emotional and feeling tone, and which were not allowed at the time adequate expression in the normal way. Distractions are also most effectual when they arouse intense psychophysical attitudes. When they are very intense, as in the case of accidents, then much is forgotten that happened before and after the accident. Our work shows the effect, on the whole, is to influence what preceded the accident.

When we come to associated and dissociated words the matter is not different. We have seen that if impressions arouse a strong psychophysical attitude they stand a good chance of being remembered. Some limitation must be put on that statement. If several impressions come in close sequence to one another, and, as is probable, they arouse quite different psycho-physical attitudes, then the various combinations of reflexes which give expression to these attitudes will be mutually inhibitory. In this way inhibition takes piace, and thus many words in a dissociated list are lost. One psycho-physical attitude will cancel or partly cancel another. To this can also be added the effect of ideas already suppressed. In associated words only this

last feature is operative to banish them. The impressions are all centered around one central attitude and hence this mutual inhibition is absent. Not only are they centered around one central attitude, but around one which in most instances is well established.

Much is now written about mental complexes or constellated ideas. This constellating or complexing seems to be brought about by the actual or potential reactions of the organism. Physiologically, it may be said that ideas are grouped and unified by the compounding of reflexes, that back of emotions and feelings are well-defined and well-established reflex expressions. To include this and also to keep in sight the part which appears in consciousness, the term psychophysical attitude is convenient. These much ignored initial responses are the background and foundation of our whole mental life. To include all responses, then, to include consciousness and that small part called self-consciousness (by some this latter is wrongly called consciousness and the word is denied further extension), to include organic feelings (a poor term), also many reactions which never come to self-consciousness but which are undoubtedly the most important, and on which the stress is here laid — for all this we use the term psycho-physical attitude. Consciousness would be a much better word for the organism's total reactions, and then self-consciousness, attitude, reflex, etc., could be used to mark off the various ways of functioning.

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APPENDIX

Example of Pleasant List:

Warm, income, perfect, amiable, delightful, hopeful, spring-time, kind, elegant,

divine, lovely, home, best, pleasant, gorgeous, truthful, good, rapture, healthy, golden.

Rich, dream, clever, joyful, rose, skill, laugh, lily, tidy, daisy, strong, flower, merry, gentle, honest, clumsy, cottage, sweet, sincere, polite.

Example of Unpleasant List:

Defeat, drear, dirty, shriek, drown, false, skull, cringing, scold, sigh, groan, whine, crape, woe, knife, vulgar, sullen, rude, choke.

Example of Indifferent List:

Request, ability, order, need, made, great, about, relish, suppose, cousin, answer, morning, child, earth, view, start, number, enough, bush, again.

Example of Associated List:

Field, trees, orchard, breeze, reaper, stream, river, meadow, clouds, mower, brook, forest, garden, road, cottage, woods, swamp, plain, hay, cut.

A CASE OF SYNESTHESIA

BY ISADOR H. CORIAT, M.D., BOSTON, MASS.

CASES of synesthesia are sufficiently rare to warrant the recording and analysis of any new observations. In the case which I wish to report, the various synesthesias encountered (colored hearing and thinking, taste synesthesia) while limited in their scope yet were quite intense. The subject was an intelligent woman, forty-one years of age, of a decided visual type. For a number of years she had suffered from a typical anxiety neurosis (without hysterical stigmata or limitation of the field of vision) which had recently been cured through psycho-analysis. After she had recovered from her psychoneurotic symptoms, she mentioned her synesthesias for the first time, whereupon a study of the condition was undertaken. The synesthesia antedated by years the development of the anxiety neurosis, in fact, it could be traced back to the earliest years of childhood. Physically the subject was in perfect condition. There was no psychopathic or neuropathic heredity and no similar synesthetic disorder existing in any member of the family. She does not remember the time when she did not have the colored hearing and thinking.

In this subject the synesthesia was rather rudimentary and limited in its scope, in that only one color, blue, in its various shades was distinctly suggested by sounds. The shade of the color varied according to the sounds or thought. She remembered that once, when very young, she was given a doll dressed in blue. She immediately named her "Lucy Blue," while to her sister's doll, which was dressed in red, she gave the name of "Lucy Red." Her sister could not seem to comprehend this linking of a color with a name. Pieces of colored glass delighted her, while a kaleidoscope always produced a feeling of great satisfaction. Red sunsets were depressing, to use the subjects expression, "they were so beautiful that they hurt."

Certain sounds were blue and the principal words associated with the colored hearing were as follows:

"Nellie" — pale blue, an umlimited sky blue (spatial sense).

"Lucy"— a clear sapphire.

"Bertha" — a deep Prussian blue.[1]

Sometimes "Nellie" is described as "pale, soft blue, but very clear."

Further analysis demonstrated, that the predominating color of these three words was produced by the color of a combined vowel and consonant within the word. For instance, in "Lucy," the sound "loo" caused the color; in "Nellie," "el" produced the predominating color effect, while in "Bertha" the letters "er" colored the word. "L" alone without the vowel, or "R" alone, did not produce a blue sensation. It seemed, therefore, that the vowel sounds were the instigators of the synesthesia, although why the letter "E" produced a pale blue color in one case and a Prussian blue in the other, could not be determined. Strangely enough, the French words "Berthe," "Allemand" and "berceau," although containing the same vowel combinations, produce no color sensation, although "Berthe" appeared "higher" (to use the subject's description) than "Bertha." Unlike other reported cases, therefore, particularly the one studied by Marinesco, the synesthesia was limited to the phonetic combinations of one language, in this case, English.

Conversely, showing the subject a blue or red disc, such as those used for taking the field of vision, produced no association with a word or sound. Tests with a tuning fork and watch demonstrated hearing to be normal. A (long) is not colored, but sounds "cool." The long vowels suggested positions on a chromatic scale, rather than color, but these positions were not very clear to her. For instance:

$\bar{a}$ = do.

$\bar{e}$ = re.

$\bar{i}$ = do (second octave).

The vowel sounds also produced other sensations, as follows:

$\bar{a}$ = cool sound.

$\breve{a}$ = no sound.

$\bar{e}$ = high cool sound.

[1] The color here was identified by the subject the same as for the word "Karl" in Marinesco's series of color plates illustrating his case.

$\breve{e}$ = no sound.
$\breve{i}$ = very high cool sound.
$\bar{i}$ = no sound
Long and short o and u, produced no sensation.

Numbers never produced colors in her, but she has always associated the cardinal numbers with a sort of visualized geometrical line arrangement, i.e.,— ascending up to ten, dropping to twenty and then gradually ascending again. The days of the week and the names of the months produced no colors. "Sunday," however, appeared "taller" than other days. All the other days of the week were of uniform height except "Saturday," which is "half as tall" as "Sunday." The seasons of the year were always peculiarly symbolized by a spiral spring, oval in shape, the ends indicating spring and autumn, the sides summer and winter. Music produced an intoxicating effect on her, but did not stimulate colors. Separate notes of the scale and the sounds of various musical instruments failed to produce colors.

Tests with the normal spectrum gave interesting results in emotional states produced by colors.

COLOR	EMOTIONAL STATES
Purple,	repulsive and depressive.
Blue,	not satisfied.
Green,	not satisfied.
Yellow,	flash of light.
Red,	nothing.

The word "Bertha" was localized in the blue-purple end of the spectrum. No color was strong enough for "Lucy" or light enough for "Nellie."

Both hearing the words and vowels and thinking of them, produced the same sensation of color, therefore, colored thinking was present in addition to colored hearing. An interesting gustatory synesthesia was also present, but not to the extent of a genuine colored gustation. A quotation from Ruskin has always appealed to her:—"We should love beautiful colors as a child loves good things to eat." Beautiful colors have always "tasted good" to her, while color discords were nauseating and produced the effect of a blow. She expressed the condition as follows: "If I like a

color, it leaves a delightful taste in my mouth, like the sensation when one thinks of beautiful food," or "when I put my mind intently on the colors, I taste them. I can taste blue." There was no olfactory synesthesia. Direct tests of smell and taste, proved the olfactory and gustatory sensations to be normal, but these tests did not stimulate my photisms. This taste synesthesia was less intense than the colored hearing or thinking.

An analysis of the synesthesia itself, particularly the colored hearing, gave some interesting results. The synesthesia had not varied since it was first noticed during the earliest years of childhood. It was purely a waking process and not due to unconscious associations of sounds with colors dating from the earliest years of life. This was shown by two facts, first, that in the subject's dreams, sounds have never been associated with colors, and second, because an analysis conducted in abstraction through means of free association procedures gave negative results. That the phenomenon was a cortical one, possibly physiological, is shown by the facts that neither positive nor negative after images could be produced with colors of the synesthesia, and secondly, the colors were always seen in the left half of each visual field, but not exteriorized. That genuine synesthesic hallucinations of color may be produced is shown in an observation by Lemaitre. The color was always definite, distinct and invariable, and the same sound or word was always associated with the same color. The color and sound occurred simultaneously, and instantly the sound seemed to "melt" (to use the subject's expression) into the color. A reversion of the process, thinking of the specific color, never produced the word or sound associated with that particular color. The vowels in the words designated, and not the consonants, were the instigators of the photism. Closing of the eyes did not increase the intensity of the images produced. The color was very luminous, would persist for some time after she had ceased hearing the word or thinking of it, and was not of definite shape or size, but rather like a "puddle," shading off a little at the edges.

To summarize briefly, we seem to be dealing with a limited but intense synesthesia occurring in a psycho-

neurotic subject, but antedating the psychoneurosis by a number of years. It was probably congenital in origin and had remained unchanged since childhood. There was no heredity of familial tendency. This is of interest, as in many recorded synesthesias, the hereditary tendency has been marked, for instance, in a case of Marinesco's and in one of familial colored hearing reported by Laiquel-Lavastine. Both colored hearing and thinking were present, in which variants of blue predominated. There was also a rudimentary gustatory synesthesia.

What is the cause and origin of this interesting phenomenon, this linking of sound with color, apparently contradictory to the law of the specific energy of the senses? Under normal conditions, any form of stimulation of the retina or optic nerve, would always produce a sensation of light or color, or the stimulation of a "cold point" in the skin by a needle or a hot wire, always causes a sensation of cold. The quality of the reaction is a constant one, in spite of the variations of the stimulus used. Whether this specific invariable character of a sensation resulting from different stimuli is of peripheral or central origin, whether localized in nervous end structures or central projection fields of the cortex is a point which has not been entirely cleared up. It is probable, however, that the specificity resides as much in the end organs as in the cortex itself. A synesthesia seems to be an irradiation of the specific reactions, a phenomenon which is well known in experimental physiology.

In any case the synesthesia appears to be a cortical phenomenon, partly because of the impossiblity of producing negative or positive after images, and partly because the synesthesia was irreversible. This irreversibility of the phenomenon would also seem to prove that it was not an emotional state, but rather a physiological condition, due possibly to a physiological irradiation of impulses. The fact, too, that in my case, there were no unconscious linkings of colors with sound, and also that the photisms were instantaneous, and had not varied since they were first experienced in early childhood, would argue against the emotional explanation of the condition. This invariability of the color sensations in the synesthesia for years has also been

noted by Dresslar in a case which was observed over a long period of time.

It seems, therefore, that we are probably dealing with an incomplete, almost congenital, differentiation of the sense of vision and the sense of hearing or rather of the cortical projection fields corresponding to the peripheral auditory and visual neurones. On account of this incomplete differentiation, a stimulus (a word heard or thought), irradiates or is derailed to a cortical center which does not correspond physiologically to the peripheral neurone stimulated. That such an irradiation of nervous impulses does occur, has been demonstrated experimentally by Sherrington and can be explained on the basis of different conduction resistances offered by different fibers, probably an over-facility of conduction at different synapses. In the clinical manifestations of apraxia, likewise, this "derailing" and irradiation of peripheral impulses is frequently seen. Thus it seems, that the theory of nerve irradiation, arising from a congenital defect of the nervous system, in which the stimualtion of one center passes over into another, varying with the individual and with the intensity of the provoked sensation, appears at present, the most satisfactory explanation of the various synesthesias.

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A PSYCHOANALYTIC STUDY OF A SEVERE CASE OF HYSTERIA

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(*Continued from p. 406, Vol. VII, No. 6*)

IF the repression theories are true, the release of the repressed memories, which through repression become pathogenic nuclei, should result in recovery, if adequate opportunity is provided for sublimation. In the case partially reported in the previous paper, it was assumed that recovery would be complete when the patient succeeded in sublimating her energies. During the summer the patient remained relatively well. She began her work in the fall but did not long remain well. In November she had a recurrence of one of the old symptoms: nausea and reflex vomiting. This relapse might be due to one of two reasons: either the repression theories are not true and there were other causes of the symptoms, or there were other pathological repressions which had not been released. The second view was again assumed, and a search was begun for further psychopathogenic material. In view of the distressing difficulties necessarily attendant on this search one might well hesitate at putting the patient through such mental and emotional agony. Mere scientific curiosity hardly seems warrantable, but the seriousness of the symptoms was the warrant for the seriousness of the attempts made at removing them.

At the first interview, the patient told me her nausea had started a week before, just after dinner, at night. No adequate cause could be found. She said at the next interview that she was having a great many dreams of her mother. "It seems as if my mother were in my mind all the time; and yet I'm thinking of other things, too." Her mother is constantly coming back to her but she is as constantly putting her out of her mind. The next day she said, "I seem to be thinking of something but I cannot tell

what it is." She feels as though she would like to go and hide herself, as though she were ashamed of herself.

As before, she blamed it all on her father. She said he was very nice to her now, but he seemed to be doing it on purpose to "get around" her, in some way.

There is something troubling her. "It seems like something forgotten, or something I've put out of my mind and I'm bound not to think of. I say I try to think of it, and I don't try to, and I do try to. I simply can't put my mind where I want to put it. . . . I keep thinking all the time; and what I'm thinking about I don't know; but I know I'm thinking."

During the next three interviews the resistances developed were tremendous. The net result was a further suspicion against Dick.[1] At the next interview the patient related a dream in which she was trying to make a word from the alphabet. She thought the word was "Dick." She said she was certain Dick was in it. She ended the interview by saying, "I won't look. There is no God or He wouldn't let it happen. I don't know it and I won't know it."

At the next interview, the patient said, "My mind keeps going to the lounge, lying down and getting up. I was just thinking of it and something came over me that made me sick to my stomach." At last she said, "Dick did."

But it came as an unrelated fact. There was no connection in memory between this fact and anything else. The next day while trying to look she said plaintively, "If I could just see through that black space I'd know everything."

Finally she remembered Dick, her lover, had assaulted her in her own house. Some girl friends came in that night to supper. At supper she was nauseated by the sight of food and couldn't eat any. She said she and Dick had been eating candy all day. Her father and mother were away and Dick had spent the day at her house.

At the next interview, Monday, nothing more was remembered. But Tuesday she remembered that it was

[1]Cf. first paper.

candy which had started the vomiting again this fall. The assault, too, took place a week or so before Thanksgiving. She remembered that she had been eating candy on the day of the assault and felt queer, not faint or dizzy exactly, and Dick had helped her to the couch. Wednesday and Thursday she remembered further details and Friday she remembered all.

Here, then, is a third level, a third psycho-sexual trauma, which acted like a pathogenic nucleus, under repression.

Now we can understand the meaning of the mixing of words, "neighbor," "Dick." The tramps in the woods, the neighbor, the lover, all had been the cause of psycho-sexual traumas. Her father and mother were mixed up in it through the fact that they had warned her strongly against Dick, her father going so far as to forbid her to have him at the house. Her mother's relation to the trauma was at least doubly determined, because besides warning her against Dick she had helped force her to repress the memory of the neighbor's assault. We can understand also why Dick was so persistent in her mind — why she dreamed of him as she did — why she was so relieved at his death, etc.

It is worthy of note that the complex deepest buried was chronologically the latest trauma, while what came relatively easily to the surface of consciousness was the oldest event temporally. The depth of burial is a function of the intensity of repression, not a matter of time, and the intensity of repression is a function of moral repulsion and loathing.

Again assuming that the past repressed memory, or psycho-pathogenic nucleus, had been found and released, the patient was discharged from the hospital, where she had stayed two days, and allowed to work. In ten days, however, she was back, the vomiting having begun again and persisted. One day, too, she had also had complete aphonia, lasting from 10 A.M. till late in the afternoon.

Still clinging to the theory of repression, another siege was begun to overcome what turned out to be the greatest resistance of all so far met. Of course the first suspicion turned again toward Dick. I questioned her. "Did

Dick do anything more?" "I never thought of it before till you mentioned it. . . . It seems as if my mind never thinks of anything except what I want it to think of." In the light of what was later learned the following description of her feelings is especially significant. She said that she felt numb, especially when she got up in the morning. As to her memory of the events already uncovered, the patient reports that everything goes unless she consciously holds it. When she relaxes, it goes right out of her mind. Then it comes back as a terrible shock. Everything goes black. She feels faint, dizzy, all power leaves her, she has to fight for strength. Then she thinks of what causes it, and Dick is remembered, followed by the others.

The same procedure was followed as before. The patient was told to look backward mentally and tell whatever she found. "I will not look at anything more," she declared and repeatedly brought forth all the reasons she had against looking, already fully reported. "My mind seems fixed on something. When you say a word my mind goes to that; or I can think of anything I want to; but all the time it is fixed on something else and won't go anywhere."

When I saw the patient next she had aphonia. She had lost her voice the day before about 2 P.M. It was an almost perfect aphonia. She could speak only in the faintest whisper. During the interview her voice cleared up for a few moments, but for a few moments only. She was lying down with her eyes closed, answering questions and telling me what she saw, speaking quite as plainly as usual. Suddenly she started. "What did you see?" I asked. She was unable to answer for her voice had left her again. In a whisper she said, "A cloud." Many times I urged, "What do you see now?" "I think of the room now and it goes into a black space." Her mind stayed in the "black space" and she had to leave finally without having regained her voice. The patient returned next day, able to speak all right, but wobbly on her legs. Her voice had returned early in the afternoon. Shortly afterwards, while lying down and in a sort of dreamlike state, she was startled and felt as though she had lost the use of all her body. She

did not dare to lie down again that day or night lest she lose the use of her legs as she had done last year. "My mind seems awfully tight, yet I know I'm thinking of something underneath." She described the action of her mind as "closing." It was like the action of a camera shutter; or like the action of the iris when a bright light is flashed before the eye.

The next day the patient said that everything she had remembered seemed more remote and unreal. Monday, however, she said that all day Sunday she was in a sort of dream. She had forgotten everything again. She even forgot an engagement she had with some girl friends to go to a concert in the afternoon. In the evening she was asked what train she was coming in to the hospital on in the morning. For a moment she was very much surprised for she had forgotten she was to come. Then she remembered she had to come in, but didn't know why. After awhile it came back to her that she had forgotten about what had happened to her at the neighbor's, in the woods, etc., but the whole thing did not come, except momentarily, till this morning, when she remembered what Dick had done to her. Urging her to tell me what she was thinking of, brought the response: "It is all I can do not to put it down in my limbs. When I go to look at it, it is all I can do not to push it right down in my body."

She almost lost the use of her legs, at this interview, but was finally able to go home promising to return Thursday. Thursday, however, during the interview, she suddenly became completely paraplegic and was again admitted to the hospital.

I was unable to see the patient for a week. When I did see her she was still paralyzed. She remembered and told me of one final distressing meeting with Dick, though it appeared to be of no especial significance.

Questioning her the next day she gave a start and then said everything went blank for a moment as though she were blind. I had her lie down. While lying very quietly she suddenly gave a violent start. She cried, "It seems as if I know, yet I can't say it." That night she dreamed she was trying to hide — sometimes herself,

sometimes a boy whom she was taking care of. Two days later she described a real attack of psychic blindness or hysterical amaurosis. She said she seemed blind, in a dream, the night before, and woke up actually blind, remaining so for a short time. She had another attack of blindness later, lasting about two minutes. Then she confessed that she had been having such attacks for nearly two weeks. She said she didn't tell of it hoping it would pass off. Twice, during our interview, the patient went suddenly blind, once for nine minutes, another time for three minutes. What caused it I could not determine then. The next day she was blind for half an hour during our interview and although she could see a little when she went back to the ward, her sight almost completely left her as soon as she returned and she was practically blind all the afternoon, her sight going completely before she went to sleep. She could see all right the next morning, however, and see all that day and the next, till about noon, when she was again blind, perhaps fifteen minutes.

At the next interview I got hold of a thread that led us into still deeper recesses of the patient's subconsciousness, where she kept her repressed complexes. On inquiry as to her dreams of the night before, the patient said she twice woke up crying, but could not tell what about. The nurse, however, said she called out her brother's name several times, in her sleep and cried out, too, "Why did you do it?" (Jan. 16. See fig. 1.)

Questioning her as to what that might mean, now brought out the following. I learned that her brother had been accustomed to coming to her bed, mostly in the morning, and getting in with her. Her mother made no objection to this practice, and it was kept up until she was eighteen or nineteen and her brother fourteen or fifteen. He would waken her by throwing pillows at her and then they would wrestle together. Sometimes he would throw her and sometimes she him. Then he would get in bed with her and they would sleep together. They would get very excited. This habit was gradually broken off because one morning a girl friend came before they were up. Her brother said, "Let me get out of this." When her friend

came up-stairs she asked her who was in her room, and when told it was her brother she said *she* never would let her brother come in her room. This brought the patient to a sort of self-consciousness and from that time she discouraged her brother's coming, though it was not absolutely stopped.

Now came a tough time for both analyst and patient. In German phrase the resistances developed were "enorm." A week's struggle, similar to those already reported resulted in the patient remembering that one morning, when she was about sixteen, her brother was in bed with her and something happened. She could not recollect it in detail or localize it better in time. During this week both temperature and pulse were erratic, but on the whole steadily rising.[1]

Dec. Jan. Feb.

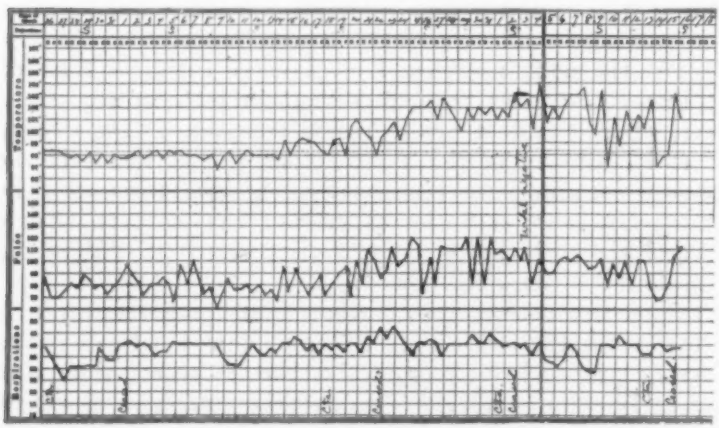

FIG. 1

January 25 the patient was kept in bed. February 3 a blood culture was made but proved negative. A Widal test was made at this time, too, which also proved negative. On the morning of February 10, the patient told me that she awakened the day before, which was

[1]See chart. Fig. 1.

Sunday, feeling much relieved. Her temperature had dropped to 99°. At about noon she said something seemed to come over her mind and when they took her temperature again it was over 103°. But that night she dreamed she would not be afraid to know anything more there was to know and when she woke her head felt clear and did not ache. She felt there was more to see but was no longer afraid to look, though she did not want to. This morning her temperature had dropped to 97°. It went up at night, however, and for the next three days stayed supra-normal, then it went to sub-normal for a day, and the next day made the wide jump from 98° in the morning to 103° in the evening. After all possible tests were made it was decided that the fever was hysterical and the patient was allowed to go home. She was discharged February 16.

Let us now follow the mental perturbations of the patient during this month of fever. The night after the patient's revelations of her relations with her brother, the patient again called out in her sleep, her brother's name and added, "I shan't tell." At the interview next morning she said she had rather kill herself than know; certainly, she had rather be sick. During the interview at about 11.30 A.M., she went blind again, and did not regain her sight till about 3 P.M. The following night the nurse said she called out her brother's name, and said, "I won't, I can't, and you can't make me." This is perfectly intelligible from the point of view of her repressions and my urging her, against her resistances, to tell all. As was the case when she tried to remember what her lover had done, so now, whenever she tried to look and see if her brother had done any wrong to her, her mind closed, or snapped shut. At other times, she said something seemed to flash across her but what it was she couldn't see. Two nights following she called out her brother's name again and said, while still asleep, "Stop! Please do!" and then she added, "I know it's so, and I won't say so — Mamma, you know it, too. No, I won't, and I shan't do different. Oh, dear, dear, dear. Well, then in the morning, but I can't now, it makes me sick." But in the morning she could not tell any more. She said she had vomited some. She declared

she never would remember it, if it were her brother. "What do you think about it?" I asked, "I can't think, it's too big."

Two days later the patient said, "It seems as if the tightness of my head was going away. . . . It doesn't seem as if I were afraid to look now, but I don't see anything. . . . When I think of it my head goes tight and then it strikes my stomach. . . . It seems as if it is that . . . I'm thinking that must be it but I can't place it. . . . Something happened, but I don't know when . . . I know he did, but I don't know anything else about it." When I saw the patient the next day she told me that when she left me yesterday her head felt clear. She kept the awful thought in her mind. She ate her dinner all right and did not vomit. But about 4 P.M. her head got all tight again and her memory seemed to go. She tried to eat her supper but vomited it all up; as well as her breakfast this morning. As usual I had her lie down and close her eyes. She asserted, "I don't know it to place it. It seems as if I knew it and yet I don't. . . . It seems as if I couldn't look at it because I don't want to." I could get nothing further at this interview. The next day the patient said, "I know well enough it happened," and then she remembered that she was about sixteen years old. She said she had been awake most of the night, but had had a short dream. She dreamed she was home; she took some poison, died, and was with her mother, happy.

And so it went for the next two weeks, no definite advance apparently being made. February 4, however, the patient got a clear memory image of this fourth psychic trauma, but no further details. On this date, too, another symptom showed itself. The patient said she heard music. She had complained previously that music made her sick. When I questioned her she had said, "Oh! I hate music. . . . When I hear it, it makes me think of what I've been through." Further questioning brought forth the fact that her mother had a habit of playing hymn tunes in the morning before the patient got up. The patient asserted that she couldn't stand church music. For one who used to sing in a church choir this was certainly singular. She

claimed to have noticed this feeling first last summer, when with a friend, who noticed, too, that music made her feel faint. The next day the patient told me she had had three dreams. In one she dreamed she had been burying a lot of things in a deep hole. Just as she was about to bury the last I came along and asked her what she was doing. She would not tell, but I found out. In the second dream she dreamed "it" was not so. In the third dream she was walking at different ages with her brother. She still had auditory hallucinations of music. The next day she told me the night nurse said she had called out in her sleep her brother's name and then added, still apparently asleep, "I told just as little as I could, I won't tell any more." She had vomited badly before going to sleep and again in the morning and still heard music occasionally.

The next few days showed nothing gained. But Monday, February 10, when she woke, her head felt clear and did not ache. She felt there was more to know but she was no longer afraid. This morning her temperature dropped to 97°. The next week showed a slight general improvement. The patient vomited much less and, as was said before, the temperature being believed by the hospital authorities to be hysterical, she was discharged.

During the foregoing week, nothing further being learned, we had to assume that the patient was only gradually becoming reconciled, and that eventually she would not feel so badly over what she had learned about her past.

A week after being discharged the patient returned saying she still vomited. She was blind for about ten minutes the day before and had auditory hallucinations of hearing her mother call, as well as hearing music. When her mother calls she answers and gets up and goes to her before she realizes it is an imaginary voice she hears. Nothing was learned during the interview. That night I received a telephone message saying the patient had lost her voice. Two days later I received another telephone call saying the patient had had a convulsion. From the description it was clear she had had a "grande attaque" and lest she have another she was taken the next day to the hospital.

We may well pause a moment here and reflect. The return of a convulsion is certainly discouraging. Does it not prove that all these theories of repression are untrue, or at least inadequate, and psychoanalysis as a therapeutic process of no special value? Is it not what one might expect and should one not give up the whole thing as a bad job? Of course one might do just that, but taking heart from Freud's statement of the time necessary, in some cases, to effect a complete cure, I persisted, on the assumption that not all had even yet been revealed, and that there were still hidden submerged complexes to be released. Now began the next and last stage of the analysis.

During the second night at the hospital the patient again became paralyzed in both legs. She heard music and occasionally heard her mother calling her by name. Her left hand had closed once but she was able to open it herself. A few days later while interviewing the patient her brother was announced, and after recovering from the start this gave her, she found her left hand clenched and was unable to open it. She was obliged to go about in a wheel chair. During the first two days at the hospital the patient vomited badly, but with the onset of the paraplegia the vomiting stopped.

The next day, after her hand had contracted at the announcement of her brother, the patient told the following dream which is of significance in the light of the next revelation. She dreamed that some one kept opening her hand and picking bugs out of it. The analysis of this dream developed enormous resistances, which, on being overcome, revealed the fact that the patient had masturbated as a child. Even as the patient told this she opened her hand and there has been no return of this symptom. The paraplegia remained, however, and also the hallucinations of music and of her mother calling. The condition of the patient remained unchanged the next four days when she began to vomit again. During the next three days the vomiting somewhat increased and as it did so the patient began to move her legs a little. The next night at about six o'clock, the patient had a convulsion. She beat her head upon the floor, tore her hair out by the roots, and

fought off the doctors and nurses. It took six nurses and two doctors to hold her. She was put in a pack and after about half an hour calmed down.

When I saw the patient the next day she told me she had been in a sort of day-dream just before the convulsion. All of a sudden, she said, everything was clear and came right before her eyes. She knew all that she was trying to recall. It made her feel faint and sick; she couldn't seem to bear it; "something snapped" in her "brain" and she knew no more. The only thing she could remember of what she saw, was, that it was true that she had "played" with herself. She said her head was relieved, but she still had the same hallucinations. She could stand and walk, but was wobbly. The next day she began to vomit again. Two days later, during the analysis, the patient suddenly started up and said, "I know why I hear music. Mother was playing that morning" (i. e. the morning her brother and she were together). The next day the patient said she had heard no more music. When she thinks of it, though, she thinks of her brother.

The next day the patient said she had wakened in the night, saying, "I haven't lied." Then she remembered a dream in which it seemed she had lied, and she knew it and knew why. She then said she had thought a good many times that if she could only get out of it by lying she would lie. She said if she could only make it not so by saying it wasn't so, she would. Some of the significance of this is at once obvious.

The next day when I saw the patient, she informed me that she still vomited, but that she had heard her mother calling only once and that she no longer heard music at all. So things went on for a week. The nurse reported that while the patient still vomited, it had been steadily growing less for the last few days. She said she was bright and cheerful and in every way improved. During all this time of the last hospital care the patient's temperature had averaged about normal, only slight variations being noted.

During this week I had been seeing the patient every day as usual. One afternoon she said she felt better,

especially that morning, till about ten, when something flashed across her mind and made her vomit violently, and that noon she had vomited as badly as ever.

While the patient was lying down, and I was questioning her, she gave a sudden start, and in answer to my inquiry said, "It was that thought." The next moment she started again, still more violently, and sat up. After making considerable resistance she said, "It was brother, father, and everything."

Then it came out that when she was about six or seven years old her father had touched her, and after that she did it herself more than she remembered, and that she had been with her brother, "right along."

During the interview it developed that she had heard her mother once during the night and had heard music, but not during the day. The next afternoon the patient told me she had vomited a little at supper, but not at all that day, after either breakfast or dinner. She had had no hallucinations. The analysis only showed further details and did not reach a deeper level. The day after, however, brought forth the repressed complex. The patient said she had not slept all night. Questioning her finally brought out the fact that she had remembered, during the evening, that about two months before her death, her mother confessed to her that she had been sexually abused by her father and confessed further that she had made serious sexual mistakes herself, telling her in detail what they were. Before telling the patient this her mother made her promise never to tell anybody else. The knowledge stunned her. She left her mother without saying anything and walked and walked till night, when she returned and without saying anything to anybody, and without eating any supper, went to bed. The matter was never again referred to between mother and daughter, though her mother complained that her daughter seemed changed. Two months later her mother died. Since then the patient does not remember that she thought of her mother's confession till the night before she told me.

(*To be Concluded.*)

ABSTRACTS

SOME TYPES OF MULTIPLE PERSONALITY. *T. W. Mitchell, M.D. Proceedings of the Society for Psychical Research.* Part LXVI. November, 1912.

In this paper an attempt is made to distinguish two main types of multiple personality. The distinction is based upon the memory relations of the primary and secondary selves. In the first type two or more personalities appear in alternation and each is amnesic for the other. In the second type the secondary personality claims to have a continuous co-conscious existence during the whole time that the primary personality is in evidence, and shows complete knowledge of the primary personality's experience. The first type is referred to as the alternating type and the second as the co-conscious type. Of course co-conscious personalities are also, as a rule, alternating personalities, but they are not *merely* alternating personalities. They are also co-conscious. And the writer thinks that they form a separate class whose differentia is this very fact of co-conscious activity.

Instances of the alternating type may be arranged in a series according to the extent of the section of the self that becomes dissociated. The simplest forms are the hysterical somnambulisms described by Janet, in which a mental complex related to some episode whose emotional stress has led to dissociation, takes on independent functioning and for a time dominates the organism. In monoideic somnambulisms, conduct is solely determined by dissociated memories and is merely a reproduction of past experiences. But polyideic somnambulisms may be arranged in an ascending series in which conduct becomes more and more determined by the actual circumstances of the moment. In fugues the independence of the secondary state is often complete and they may be legitimately considered as examples of the development of a true secondary self.

The fugue is, however, dominated by a fixity of purpose which is wanting in more clearly marked states of double or multiple personality. The case of Ansel Bourne may be regarded as a transition form. In the first fortnight of his second state his conduct conformed to that of an ordinary fugue. In the remaining six weeks he settled down as a secondary personality.

In somnabulisms and fugue states the dissociated section of consciousness is relatively so small that its disappearance does not lead to any very noticeable change of character in the primary state;

but sometimes dissociation bears upon such a large section of consciousness that the curtailment of the self which its withdrawal entails may amount to a change of personality. Varieties of this form are shown in such cases as Azam's Felida X., Janet's Marceline R., the Hanna case (Sidis), and the BI–BIV phases of the Beauchamp case (Prince). The main feature of this class is that an original whole self becomes split up by the dissociation of a large section of it. The alteration of the self caused by so great a secession amounts to a change of personality. The extent of the dissociated portion is so great that it also is capable of manifesting as a secondary personality. We thus get two curtailed selves which may alternate one with the other, and a hypothetical third self — the complete self — which will appear if a synthesis of these two portions can be obtained.

The co-conscious type of multiple personality finds its simplest expression in the two separate streams of thought which are found in certain hypnotic experiments. It is not claimed that the hypnotic consciousness ordinarily persists in waking life as a secondary self; but it is held that true secondary personalities, demonstrably co-conscious with the waking self, may be artificially produced or may develop spontaneously during hypnosis. Examples of this are to be found in such cases as Janet's Lucie and Madame B. (Léonie), the author's case of A. G. P., described on a later page, and in the Sally personality of the Beauchamp case. Co-conscious personalities occur usually, if not always, only in cases that have been subjected to hynotic or other artificial procedures. They do not seem ever to have formed a part of the waking self, and no synthesis of them with the waking self is necessary in the interests of mental health. It may be that some nuclear complex, around which a co-conscious personality may grow, has been provided by dissociation, but the development of the secondary personality must be a purely subconscious process.

No explanation of multiple personality can be attempted until it is decided what holds consciousness together. There are two main views as to what constitutes the ground or basis of the unity of consciousness. One view is that this ground must be sought in the structural and functional continuity of the nervous system. The other main view is that we are forced to postulate some psychical subject or soul which alone can account for the fusion of the physical manifold of experience into one psychical unitary whole.

Alternating types of multiple personality may be accounted for on the former hypothesis by supposing that a neural dissociation occurs which splits the total mass of neurones subserving

consciousness into two or more functionally discontinuous groups. Co-conscious personalities are more difficult to explain on this hypothesis. The chief difficulty consists in providing for a duplicating of neural structures corresponding to the duplicating of the content of the mind which these personalities show.

On the second hypothesis alternating types may be explained by supposing that the soul interacts alternately with two or more functionally discontinuous systems of neurones. Or, we may suppose that when the split-off part functions as a secondary personality, a second psychic being or soul enters into relation with this portion of the nervous system while the original soul retains its relations with the other portion. This latter supposition may also be applied to the explanation of co-conscious personalities. It is the view adopted by Dr. McDougall, in his work *Body and Mind*, as affording the best explanation of such a personality as Sally Beauchamp.

The gradations that may be observed between the simpler forms of co-conscious activity and fully developed co-conscious personalities seem to render this view untenable. If we must postulate a soul as the necessary ground of the unity of normal consciousness, we must, it is true, postulate a soul as the ground of the unity of each of the consciousnesses met with in co-conscious personalities. But there is no reason why one and the same soul should not be the effective ground in each and all of the phases of consciousness occurring in one individual.

The unity of the personal consciousness may not have its true ground in the functional or structural continuity of the nervous system, but its manifestation as a unity is at least conditioned by such continuity. In multiple personality of the alternating type the division of the self may be due to a functional discontinuity of the neural systems through which the soul habitually manifests. But co-conscious personalities cannot be explained in this way. The knowledge of the primary personality by the secondary seems opposed to the view that these personalities are produced by a breach of the continuity of the systems of neurones subserving waking consciousness. The consciousness of co-conscious personalities is invariably wider and more inclusive than that of the waking person, and it cannot be correlated with the functioning of a split-off portion of the total neural substratum of consciousness.

The only way in which it seems possible to account for the discontinuity of consciousness shown in cases of co-conscious personalities is to suppose it due to alterations of the psychophysical threshold. The normal threshold has been determined in the course of evolution by its being that at which consciousness

is most useful for life. But the height of the threshold may vary under different circumstances. If it is considerably raised the activity of large systems of neurones ceases to have any conscious accompaniment of which the individual is aware, and the extent of the field of consciousness is proportionately curtailed. On the other hand, if the threshold is lowered we get an expansion of the normal consciousness. Neurone aggregates, whose activity is not intense enough to manifest in waking consciousness, become functionally continuous with the general mass of neurones now functioning at a lower threshold level.

It would seem that functional activity at the lower level may go on concomitantly with activity at the normal threshold and that each form of activity may be accompanied by consciousness. We may thus have two co-existing streams of consciousness manifesting as two distinct personalities through one bodily organism.

We may regard the unity of consciousness revealed on introspection as being conditioned by the spatial continuity of neural elements and by a psycho-physical threshold above which only is the functional activity of these elements effective in this respect. Multiple personalities of the alternating type are due to a structural or functional discontinuity or dissociation of neurones. Those of the co-conscious type are due to the existence of different threshold levels at which conscious processes may arise.

AUTHOR'S ABSTRACT.

A STUDY IN HYSTERIA AND MULTIPLE PERSONALITY WITH REPORT OF A CASE. *T. W. Mitchell, M.D. Proceedings of the Society for Psychical Research.* Part LXVI. November, 1912.

Amelia Geraldine P——— was twenty-nine years old at the onset of her illness in 1901. Up to that date she had enjoyed good health. There was no discoverable neurotic taint.

After a few days of general malaise her left hand suddenly began to be rhythmically extended at the wrist. This soon was combined with supination of the hand. Then the elbow joint was included in the movements, and next day the whole of the left arm was affected. The movements ceased during sleep. A day or two afterwards, while the left arm was still jerking vigorously, the left leg became affected in a similar manner, the movements beginning with inversion of the foot and gradually implicating the whole of the leg. Next the right leg was included in the movements and finally the right arm. Then the movements of the left arm began to abate and this was followed by a gradual cessation of the movements of all the limbs. The order of recovery was the

same as the order of onset. During all this period the temperature ranged between 99° and 101° F. After the movements had practically ceased there was found to be right hemianaesthesia, marked concentric reduction of both visual fields, paresis of all the limbs, and almost total inability to walk. There was also a peculiar affection of the function of language in which speech, reading, and writing were all implicated. The speech defect was characterized by lalling upon many consonants. The most constant substitution was the use of the sounds *y* and *s* for other letters. She could not read at all. She could still write, but her writing reproduced all the peculiarities of her speech. For many months she was almost totally word-blind. She could read by kinaesthetic impressions all written letters except *k*, *l*, *p*, and *r*. Prolonged efforts at re-education were of no avail and were given up, but in the course of time all the speech defects gradually disappeared. At the end of eighteen months she was practically well in every respect, with the exception of right hemianalgesia, which persisted for nearly six years.

At the end of 1904 she again became ill. There was general malaise with febrile temperature as before, but the movements took the form of choreic spasms of the face and tongue. She became deaf and her speech was affected as before. Her condition remained more or less unaltered for many weeks. Some symptoms passed off and new ones took their place. She had paralysis of the right leg which passed off suddenly. She said she heard a voice within her say "you can walk." She immediately got out of bed and walked without difficulty. She became totally word-blind and letter-blind. She seemed to lose all knowledge of written and printed words and could not remember that she had ever known anything about them. At the end of a year all these disabilities had disappeared.

In November, 1908, she had a third attack. On this occasion she complained of much pain in the head and said she constantly heard voices telling her to run away from home or to throw herself into the water. For the first time in this case suggestion was tried, and the obsessional thoughts disappeared; only to give way, however, to all the old physical symptoms. Tremor, paralysis, lalling speech, word-blindness and agraphia succeeded each other in spite of suggestions during hypnosis. Some symptoms which *she asked* to have relieved were immediately got rid of by suggestion, although it seemed to have no effect on the more disabling symptoms such as the tremor, the paralysis and the defects of speech. An endeavor was therefore made to get her to ask definitely that these conditions should be cured. This plan was

ultimately successful in regard to all the more important disablities, but a considerable amount of resistance of an unusual kind was encountered.

In the course of treatment it seemed to become more and more apparent that there was a wilful rejection of certain therapeutic suggestions, and an exercise of choice and discrimination as to what suggestions were to be allowed to be effective. This rejection appeared to be the deliberate act of a second personality brought to light by the induction of hypnosis.

The first evidence of a secondary personality was shown soon after the beginning of the illness of 1908. She often talked in her sleep to her sisters, and when awake had no knowledge of having done so. She also frequently dropped into this second state in the daytime and said things she would not have said in the waking state. Her sisters said they never had any doubt as to which state she was in. In the second state her voice was different, her manner of speaking was more vivacious, and she was more determined and assertive.

In hypnosis she had knowledge of all she said and did in these spontaneously occurring states, and it was proposed to her, in hypnosis, to speak of her in the hypnotic state as Amelia and in the waking state as Milly — the name ordinarily used by her friends. From the day that this proposal was made Amelia rapidly developed independence and initiative. She wrote letters in which she referred to Milly as "she" and generally adopted the style of an orthodox secondary personality.

Amelia claimed to be the cause of many of Milly's troubles. She said: "I made her hands shake and her legs as well, and I scratched her and made all those nasty places on her hands and legs, and made her fingers close down and her thumbs, so that she could not move them. . . . I made her fall down-stairs and hurt herself."

Amelia could be hypnotized, and several phases of consciousness which assumed other names were obtained, but these appeared to be much more artificial products than Amelia. Their only distinguishing feature of any importance was the increased range of memory which they showed. They arose during a process of psychoanalysis conducted on the lines of Freud's early technic.

A psychoanalysis was undertaken because complete restoration to health could not be obtained by suggestion alone. All the most disabling symptoms had disappeared, but when the hemianalgesia was got rid of by suggestion, phobias, obsessions, and great mental distress supervened. On the hemianalgesia being brought back by suggestion the mental symptoms disappeared.

Psychoanalysis disclosed a long history of sexual traumata dating from childhood. Concurrently with the revelation of the emotional shocks which had led to disintegration of personality Milly's health recovered; but it must be added that all through the later period of treatment, as at the beginning, suggestion was employed. In the end there was complete recovery, which has lasted up to the present time.

According to Freud the pathogenic psychic material which has been crowded out of consciousness in hysteria may be shown still to exist in an orderly form, and Freud says, "One receives a delusive impression of a superior intelligence, external to the patient's consciousness, which systematically holds a large psychic material for definite purposes . . . the semblance of a second personality is often most delusively produced." This case seems to afford some grounds for demurring to Freud's view that this semblance is necessarily delusive. The induction of hypnosis seemed to bring to light a series of personalities who held in their possession a vast amount of psychic material of which the waking consciousness had lost all knowledge, and of a kind which on Freud's own showing must be regarded as hysterogenic.

AUTHOR'S ABSTRACT.

SULLA NATURA DELL 'ISTERISMO. *A. Morselli. Rivista Sperimentale di Freniatria.* Vol. xxxiii, No. 1.

A review of the various theories concerning the origin and nature of hysteria led the author to a tabulation in nine chief subdivisions of over fifty hypotheses which have held sway at one time or another, and are still in vogue with certain investigators. In contrast with the multiplicity of theories we are impressed by the paucity of information relating to the underlying essence of this condition. The various theories herein exposed and criticized are concerned almost entirely with the hysterical stigmata and manifestations while the primary constitutional background is analyzed but inadequately. The hysterical traits, signs and symptoms have been fully described, but the hysterical personality remains a problem.

Most modern theories agree that hysteria is a psychosis; for a physical substratum it is usually related to disorders of the pallium and of the basilar nuclei. Another point on which there seems to be a fairly general agreement is the matter of the determation of the fundamental disorder responsible for the

greater part of the hysterical phenomena. Most hypotheses are concerned with disturbances in the reflexes, cortical, transcortical, and subcortical (Raymond). Particular stress is laid on paradoxical psychic reactions by Tanzi, on hyperactivity by Crocq, on dysrhythmia by Organski and Joire, on so-called polygonal activity by Grasset and "short circuit activity" by Jelgersma. Among the Italian investigators, Tonnini, Ferrari and others, the prevalent conceptions are of a suspension, hyperactivity or functional perversion of one or several cerebral centers, while Janet's school postulates the theory of a dissociation of personality.

Because of the lack of control over certain psychic reflexes, particularly of an inhibitory nature, which characterizes the hysterical personality, hysteria is looked upon by the author as a form of degeneration, an encumbrance both biologically and from the standpoint of social efficiency. The true hysterical personality, he holds, manifests itself in the *grande hysterie* of Charcot. In lesser degree hysterical states are usually symptomatic of other psychopathic characters. A true definition of hysteria would have to consider this distinction. Perhaps in the future hysterical syndromata will not be included in the category dealing with the hysterical personality. The designation hysteria should be restricted to the latter.

J. S. Van Teslaar.

IMAGO. ZEITSCHRIFT FÜR ANWENDUNG DER PSYCHOANALYSE AUF DIE GEISTESWISSENSCHAFTEN. *Herausgegeben von Prof. Dr. Sigm. Freud. Redigiert von Dr. Otto Rank und Dr. Hanns Sachs. I Jahrgang.* 1912. (Heller. Vienna.)

This new periodical, the sixth psychoanalytic one to be established, differs from the others in being entirely devoted to non-medical topics, bearing thus rather the same relation to the *Schriften* series that the *Zeitschrift für Psychoanalyse* does to the *Jahrbuch*. As its sub-title indicates, it is concerned with the application of psychoanalytic researches and conclusions to the various mental sciences, particularly to pedagogy, religious psychology, mythology, folk-lore, criminology, jurisprudence, theory of morality, aesthetics, philology, and the genesis of art and literature. Those who are familiar with the number of works that have already appeared in these fields will appreciate how urgently necessary was the founding of a journal such as this, and will know that the frequent cry of "a superfluous new journal" certainly cannot be raised in regard to the present one. The impetus that psychoanalytic investigations have already given to each one of these allied sciences is truly extraordinary, in spite of the fact that the attempts to apply the psychoanalytic point of view to them have necessarily been up to the present rather tentative, and are evidently the forerunners of more extensive ones.

From the list of some twenty-five original articles that the first volume contains, the following may be selected for a word of mention; it is intended to review some of them in detail at a later opportunity. Rank and Sachs give an introductory article describing the development and aims of psychoanalysis, and have succeeded in presenting such a neat synthesis as will be of value not only to the novice but also to those already familiar with the subject. Freud contributes a series of papers entitled "On some Resemblances in the Mental Life of the Savage and the Neurotic"; three have appeared in the first volume, and the series will be continued in the forthcoming one. They are remarkable from at least three points of view. In the first place they constitute a beginning of a series of works that Professor Freud intends to write on the psychology of religion, and he has begun here with some of the most primitive forms of this, such as totemism, taboo, animism, etc. Secondly, they furnish a study of the astounding parallel between the development of the individual and that of the race in a

way much closer than has ever previously been possible, and in the third place they contain a number of new points regarding the nature of the neuroses, the obsessional neurosis in particular, and the significance of these from the point of view of human development in general. Professor Putman expounds at length his ideas on the relation of philosophy to psycho-analysis, a paper delivered at the Weimar Congress, and which gives rise to a discussion between him and Ferenczi in a later number of the journal. Abraham gives an analysis of one of the early Egyptian kings (Amenhotep IV), with a study of the monotheistic Aton cult. Sachs has an interesting essay on the feeling for nature, discussing the history of this in civil'zed peoples and the psychological meaning of it. Rank gives an analysis of the Griselda story, and of other ones showing the Father-Daughter complex. Pfister writes on the application of psychoanalysis in pedagogy and in the work of the clergyman. Sperber has an important essay on "The Sexual Origin of Speech." Maeder gives some interesting psychoanalytic impressions of a travel in England, which in the reviewer's opinion are much more descriptive of America. Robitsek has a contribution on "Symbolic Thinking in Chemical Research." Ernest Jones gives a lengthy study of the symbolic significance of the idea of salt in folk-lore, which is a contribution to the psychology of superstition and incidentally to that of baptism.

This incomplete list should give some impression of the diversity of the topics covered by the new periodical, and a perusal of its contents enables one to say that if the standard of the first volume is maintained it will represent a valuable accession to psychological literature. A word may be said in conclusion on the relation of this work to medicine. It is becoming more and more evident that it is impossible for the student of abnormal mental phenomena to confine his interest to disease processes, for the neuroses which he studies are, strictly speaking, not so much diseases as merely one variety of the many ways in which the individual may react to a given psychical situation; the relation between a psycho neurosis and a set of myths is very much closer than the relation between it and typhoid fever. For this reason a psychopathologist who excludes from his interest the study of allied products of the imagination, such as is here attempted, is seriously handicapping himself in his own work, and can never arrive at a general appreciation of the significance of "abnormal" mental phenomena. The investigations collected in Imago are thus just as important for the psychopathologist as for the non-medical psychologist.

ERNEST JONES.

THE KALLIKAK FAMILY: A STUDY IN THE HEREDITY OF FEEBLEMINDEDNESS. *Henry Herbert Goddard, Ph.D.* Macmillan Company, 1912.

Dr. Goddard's work is on popular lines, but gives an earnest of what may be expected from the more scientific study of 300 families (65 per cent showing heredity of feeble-mindedness) promised in the preface. Serious discussion of Mendelian and similar scientific problems is also postponed to the larger work in preparation. The reviewer must be content to remark that the work does just what it sets out to do — it stirs the imagination of a group of readers bound to be large in our most social of centuries.

The story is of one Martin Kallikak, whose bad ("Kak") side is represented in 1146 charted descendants from an illicit union and whose good ("Kal") side is represented in 496 charted descendants from a marriage contracted after wild oats had been sown. Of the 1146 on the *Kak* side, 262 were feebleminded, 197 normal, 581 undetermined. Of the 496 on the *Kal* side, all were normal except two addicted to liquor and one sexually immoral.

Fourteen pages of charts illustrate these facts in the simple style made familiar by previous publications of Goddard, Davenport, and associated workers. There are fourteen illustrations from photographs of Deborah, the moron great-great-granddaughter of Martin Kallikak Sr., of various other members of the family, and of their hovel homes.

The work recalls Dugdale's *Jukes* and Winship's *Edwards*, and supplements Winship's endeavor to contrast those two celebrated families. Goddard rightly says that the euthenist or environmentalist will hardly be persuaded that Old Max and Jonathan Edwards could not have been exchanged with as many Jukeses and Edwardses as ever, all the product of environment. The Kallikaks, Goddard thinks, ought to convince the euthenist at last.

Incidentally, Goddard makes the following observations, which are somewhat injured by removal from their setting:

"There is every reason to conclude that criminals are made and not born. The best material out of which to make criminals . . . is feeble-mindedness" (p. 54).

Morons "divide according to temperament into two groups" — the phlegmatic, sluggish and indolent, and the nervous, excitable, and irritable (these latter "become the criminal type") (p. 55).

"One hundred admissions to the Rahway Reformatory show 26 per cent feeble-minded." "One hundred Juvenile Court children in Newark show 67 per cent feeble-minded" (p. 57).

"It may be surmised that the Jukes family were feeble-minded." "Lombroso's famous criminal types may have been types of feeble-mindedness in which criminality was grafted by the circumstances of their environment" (p. 59).

"No amount of work in the slums or removing the slums from our cities will ever be successful until we take care of those who make the slums what they are. If all of the slum districts of our cities were removed to-morrow and model tenements built in their places, we would still have slums in a week's time" (p. 71).

Goddard regards sterilization as a makeshift, and segregation through colonization as the ideal and perfectly satisfactory method for coping with these conditions.

E. E. Southard.

Das Inzest-Motiv in Dichtung und Sage. Grundzüge einer Psychologie des Dichterischen Schaffens. *Von Otto Rank.* (*Deuticke, Wien*, 1912.)

It is really impossible to review a work of this magnitude and novelty without at the same time writing a monograph; we must therefore content ourselves here with simply a brief notice of it. The author begins with an introduction on the source and nature of poetic creation in general, and then proceeds to a detailed study, to the length of nearly seven hundred pages, of the part played by the motive of incest in this sphere, and particularly in drama. The range of the topic can perhaps be estimated by the fact that not a single poet or dramatist of the first rank has omitted to avail himself of this theme, which has inspired some of the greatest masterpieces of literature. A perfectly incredible amount of material has been gathered together in these pages, extending from the myths of savage peoples to modern Spanish novels, from the drama of the Greeks to that of Ibsen. The value of this colossal undertaking is greatly enhanced by, on the one hand, the author's artistic skill in presentation, ordering and classification, and, on the other, by the constant flow of original thoughts with which he has fertilized the material collected.

We can only say that the work easily takes rank alongside of Jung's Association Studies and Psychology of Dementia Præcox, as belonging to the most original and profound of the investigations that have been inspired by Freud; next to Freud's own writings it is perhaps the leading classic of psycho-analytic literature, and no one interested in psycho-analysis, from what ever point of view, can dispense with a close study of it. It finally settles,

amongst other things, the question of the importance of incestuous phantasies; in future any one who denies the enormous part that these have played, and still play, in the human mind, is convicted, not merely of prejudice, but of ordinary ignorance.

ERNEST JONES.

PAIN: ITS CAUSATION AND DIAGNOSTIC SIGNIFICANCE IN INTERNAL DISEASES. *Dr. Rudolph Schmidt*, Vienna. Translated and edited from the second enlarged and revised German edition by *Karl M. Vogel, M.D.*, Columbia University, New York and *Hans Zinsser, A.M., M.D.*, Leland Stanford, Jr., University. Second Edition. J. B. Lippincott Company, Philadelphia, 1911. Pp. 358, 18 illustrations.

Although planned and written on a purely clinical basis, and wholly a practical manual for diagnostic use, this book provides the "abnormal psychologist," so to say, with much that is valuable as scientific data. One misses an introductory orienting chapter or two on the physio-psychology of pain, for an able and up-to-date discussion of this sort would make the work a "classic"(whatever that may be) not only for the clinician (too busy sometimes to care whether pain be a "special" or a "general" sensation), but also for the physiologist, glad to have such ample material to sift and to discuss. It is obvious that so-called functional, as well as organic, derangements of the affective aspect of the brain stem get illumination from such material, however misleading such a discrimination may be when applied to conditions of the nervous system, inherently kinetic organism as it is. Schmidt's view-point is clear from his remarks about the "psychical modifying factor of pains: excitement, diversion of attention, suggestion either in the waking condition or under hypnosis. It is evident that painful sensations, that have what may be termed a psychical origin and from this center are projected to some one zone of the periphery, such as some of the pains of hysteria, are particularly susceptible to psychical modification. The same thing is true of pains which are peripheral and organic in origin, but which are brought prominently into the foreground only as the result of abnormal irritability of the central receptive organs." This bald and traditional contrast between pains with a "psychical" origin and those that are "organic" in their causation is a relic of a less informed time and should be abandoned if the practitioner of medicine is ever to truly understand the unitary nature of the human patient; no legendary hypothesis could mean less. What we need is a broad and complete treatise on pain, in both its theoretic and its clinical aspects,

which ignores this outworn Cartesianism and discusses pain as pure experience in the light of all known factors of pathology. Such a treatise would reveal much less of the pseudo-contrast between "organic" and "psychical" pains than the average surgeon deems it necessary to suppose, and it would relieve neurology of the present implied division of all pains into those that are "organic" and those that are neuralgic — for that is what the present classification amounts to. But we must not blame the present excellent work for the faults of its class — Schmidt but follows the tradition and he follows it well.

The chapter-headings, ten in number, show the scope of the book: "The sensation of pain (topography, time, intensity, simulation and exaggeration, quality, modifying factors, psychical and mechanical); the functional modification of pain (position, motion, pressure, food, drugs and chemicals, organic function); topography in its relation to pain; quality and time of occurrence; the nervous system (neuralgias); organs of motion; digestive system (one-third of the book); urinary system and spleen; respiratory and circulatory systems; and cutaneous tenderness in visceral disease." The last pages of the volume are devoted to setting forth a schedule of the greatly important work of Henry Head of London on referred pain; these diagrams are always of much practical importance. The book has an inadequate index but one that is a great deal better than none.

One misses data on the pains of the ovaries and uterus, for these certainly have prime importance at one time or another in the majority of women patients at every age after puberty; — this omission is another relic of tradition perhaps, or, more likely, of over-specialization on the part of the author's interests. A correlation of pains and other sensations arising from the reproductive organs with the results of psychanalysis along Freudian lines (see Brill) might prove to be of much interest to many — a good opportunity for useful research!

Schmidt's work, in combination with the labors of the translators, exceedingly well done, has given us a book of great use to the busy diagnostician, medical surgical neurological or psychiatrical.

Tufts Medical and Dental Schools. GEORGE V. N. DEARBORN.

NOTES

The New York Neurological Society announces the election of the following officers for the year 1913: — President, Dr. Smith Ely Jelliffe; First Vice-President, Dr. E. G. Zabriskie; Second Vice-President, Dr. E. W. Scripture; Corresponding Secretary, Dr. J. Ramsay Hunt; Recording Secretary, Dr. C. E. Atwood; Councillors, Drs. Dana, Starr, Sachs, Fraenkel, Kennedy.

The fourth annual meeting of the American Psychopathological Association will be held in Washington, D. C. on May 8, 1913.

The following were elected as officers of the New York Psychoanalytic Society for the year 1913: — President, Dr. H. W. Frink; Vice-President, Dr. B. Onuf; Secretary, Dr. A. A. Brill.

It is interesting to note that one of the reporters on Psychoanalysis in the psychiatrical section of the Seventeenth International Congress of Medicine (London, August 6–12, 1913) is to be Pierre Janet.

The Third International Congress of Neurology and Psychiatry is to be held at Gand, from August 20 to 26, 1913. The program as announced is as follows: —

Prof. Marinesco (Bucharest): The colloidal structure of the nerve cells and their variations in normal and pathological conditions. *Prof. D'Abundo (Catane):* The function of the lenticular nucleus. *D. Mendelssohn (Paris):* The diagnostic and prognostic value of the reflexes. *Prof. Dustin (Bruselles):* The mechanism of regeneration in the central nervous system. *Drs. Laruelle et Deroitte (Bruselles):* Early diagnosis and localization of intracranial tumors. *Profs. Von Wagner and Pilcz (Vienna):* The treatment of general paralysis. *Drs. Serieux et Lucien Libert (Paris):* The acute psychoses. *Dr. Smith Ely Jelliffe (New York):* The growth and development of the psychoanalytic movement in the United States. *Dr. Parhon (Bucharest):* The glands of internal secretion in their relation to physiology and mental pathology. *Dr. Sollier (Paris):* Regressive states of the personality. *Dr. Ed. Willems (Bruselles):* Pathological Anatomy of senile psychoses. *Drs. A. Ley et Menzerath (Bruselles):* The psychology of testimony in normal individuals and in the insane.

Prof. Ferrari (Bologna): The colonization of abnormal children and young criminals. *Dr. Van Deventer (Amsterdam):* Inspection and organization of the insane outside of asylums. *Drs. Claus (Anvers) and Meeus (Gheel):* Patronage of the insane. *Dr. Decroly (Bruselles):* Mental examinations of abnormal individuals.

The sixty-ninth annual meeting of the American Medico-Psychological Association is to be held at Niagara Falls from June 10 to 13 inclusive 1913.

A new Journal of Psychoanalysis. As a result of the editorial difficulties involving the Zentralblatt für Psychoanalyse, Dr. Freud and some of his collaborators have severed their connection with this journal, and have founded a new bimonthly publication, the Internationale Zeitschrift für Arztliche Psychoanalyse, which will appear alternately with Imago. This journal, which will be edited by Dr. Freud, assisted by Dr. S. Ferenczi and Dr. Otto Rank, is to be the official organ of the International Psychoanalytic Association. Dr. Stekel remains in editorial control of the original Zentralblatt für Psychoanalyse.

We wish all success to our new contemporary.

BOOKS RECEIVED

HYPNOTISM AND DISEASE. *H. Crichton Miller*, with an Introduction by *Charles Lloyd Tuckey, M.D.* Richard G. Badger. Pp. 252.

THE FUNDAMENTAL LAWS OF HUMAN BEHAVIOR. *Max Meyer.* Richard G. Badger. Pp. xv and 241.

NERVE WASTE. *George Van Ness Dearborn, M.D.* Health Education League. Pp. 29.

"THE STUDY OF INDIVIDUAL CHILDREN." Suggested by Maximilian P. E. Groszmann. The National Association for the Study and Education of Exceptional Children; Plainfield, N. J., 1912., pp. 69 and index.

"MIND AND HEALTH." *Edward E. Weaver, Ph.D.*, with an introduction by G. Stanley Hall, Ph.D., LL.D. The Macmillan Company, 1913. $2.00 net. Pp. xiv and 468. Bibliography and Index.